

THE FERNS OF BRITISH INDIA

BEING FIGURES AND DESCRIPTIONS OF FERNS FROM
ALL PARTS OF BRITISH INDIA

(Exclusive of those figured in "The Ferns of Southern India and Ceylon")

BY
MAJOR R. H. BEDDOME

OFFICIATING CONSERVATOR OF FORESTS

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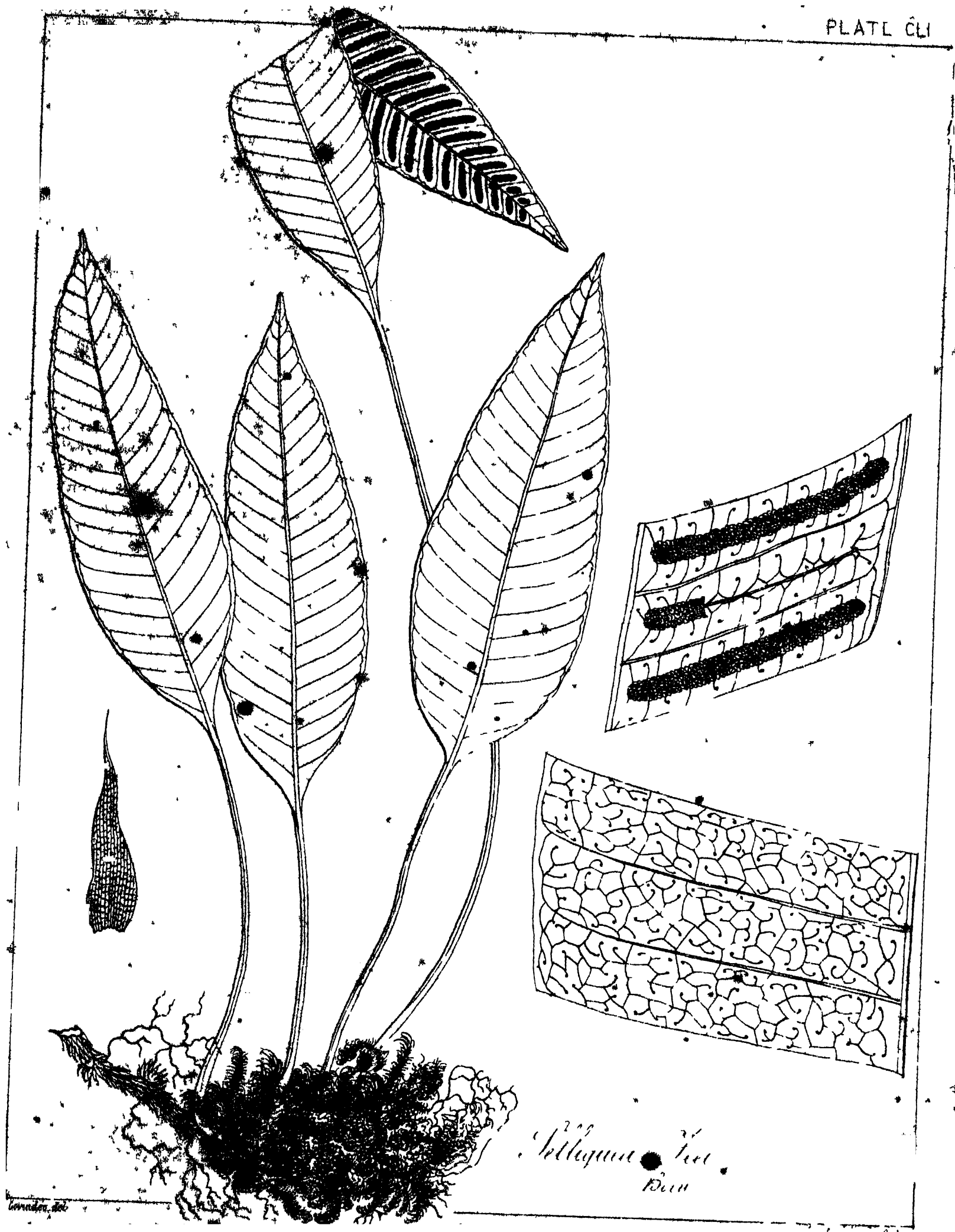
SELLIGUEA.

SELLIGUEA FEEL. (Bory.) Caudex creeping palaceous with subulato-setaceous scales which are dilated at the base stipites distant 2-4 or 6 inches long (of the fertile fronds) fronds more or less firm-coriaceous glabrous; sterile ones 2-4-5 inches long, ovate acuminate with an obtusely cuneate base rarely and only when young oblongo-ovate and obtuse; fertile ones 4-6 inches long lanceolate acuminate (rarely oblong and obtuse) sub-decurrenly attenuated at the base, costules very prominent especially in the fertile fronds, veins obscure, in the sterile fronds forming a net work of irregular areoles in which are included free clavate simple or forked veinlets, in the fertile fronds less compound and veinlets not forked, sori central between, and parallel with the costules, sunk, when young, small and suborbicular, in maturity nearly as long as the costules linear-oblong pulvinate rarely subinterrupted.—*Hook. Sp. Fil.* v. 158; *Bl. Fil. Jav.* p. 123 t. 51; *Bory. in Dict. Class d'Hist. Nat.* vi. p. 344;—*Polypodium Vulcanicum*; *Bl. l. c.* p. 144t. 56. *Fig. 2*;—*Grammitis diversifolia*. *Wall. Cat. n.* 8.

The Specimen figured is from the Calcutta Herbarium.

Hab. Penang, Singapore, Java, Borneo.

PLATE No. CLI.



Polypodium ²⁰ *hirsutum* ²¹
Lam.

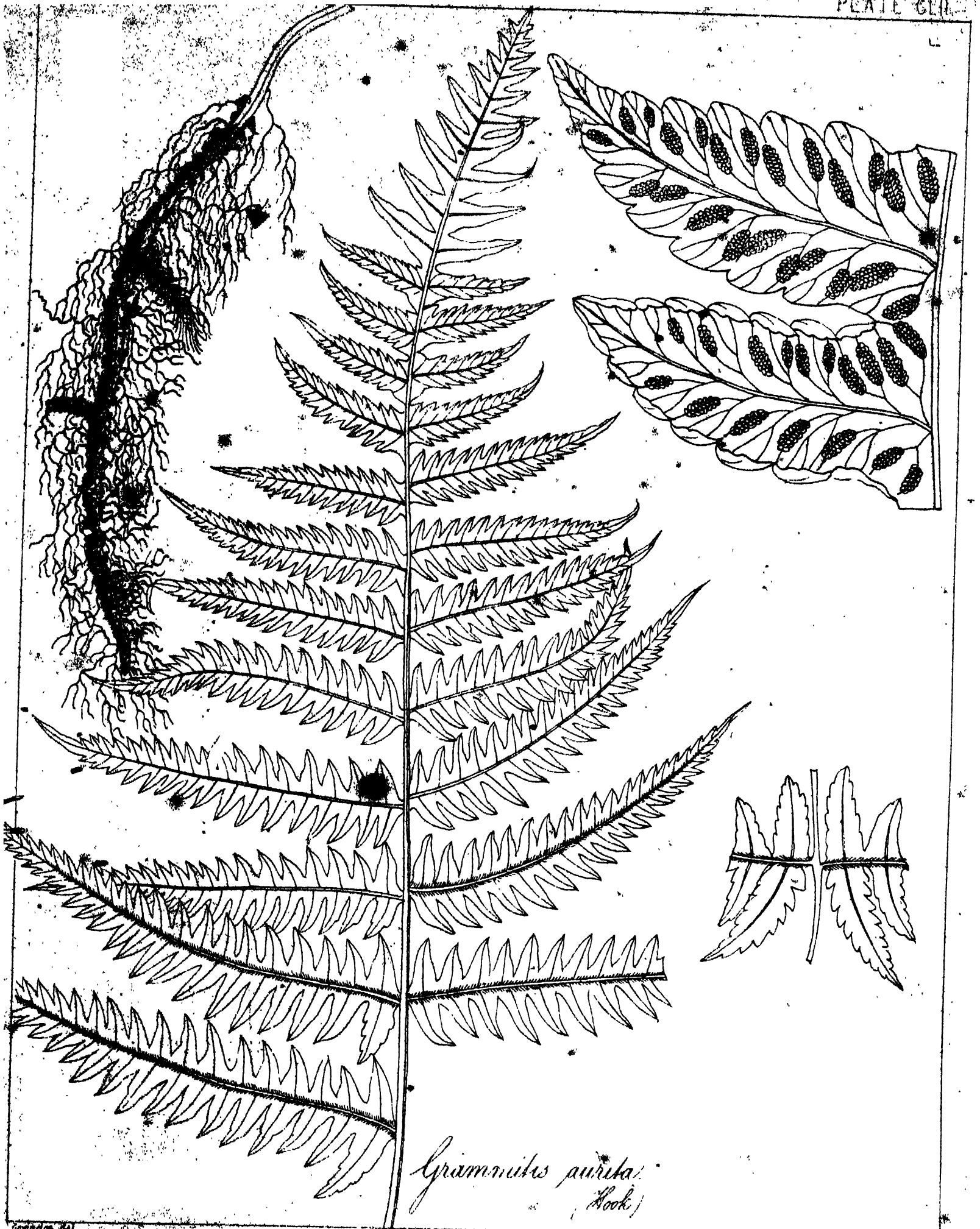
GRAMMITIS. (See "Ferns of Southern India," p. 17.)

GRAMMITIS AURITA. (Hook.) Caudex creeping elongated paleaceous, stipites a span to a foot long, dark, castaneous glossy, fronds $1\frac{1}{2}$ -2 feet long firm membranaceous ovato-oblong acuminate pinnate rarely sub-bipinnate, pinnæ mostly opposite in distant pairs approximate (confluent at the apex) 4-8 and more inches long, $\frac{1}{2}$ -1 inch wide from a broad sessile base ($1\frac{1}{2}$ -2 inches wide) oblong gradually acuminate deeply pinnatifid, lobes broader at the base oblongo-acuminate crenato-serrate the lowest pair twice longer and larger, especially the inferior one and sub-pinnatifid, veins simple or forked all soriferous, sori oblong simple rather nearer the margin than the costule.—*Hook. Ic. Pl. t. 974, or 74, Cent. of Ferns. Sp. Fil. v. p. 141.*—*Phegopteris* of *J. Sm.*

The specimen figured is from the Khasya Hills, (Blandford.)

Hab. Khasya, Mumbree and Muncklow, Lachen, (alt. 6,000 feet.)

PLATE No. CLII.



Grammitis aurita
(Hook.)

§12. HEMIONITIDEÆ

(b.) *Primary veins parallel forked, venules sparingly reticulated towards the margin.*

SYNGRAMMA. *J. Sm. Hook. Lond. Jour. Bot.* iv. 168, t. 7. 8.

(*Callogramma*. *Fée.*;—*Gymnogrammis* *Sp. Auct.*;—*Diplazii* *Sp. Presl.*;—*Oxygonii* *Sp. Auct.*;—*Callipteridis* *Sp. J. Sm.*;—*Grammitidis*, *Sp. Wallich.*)

Gen. char. *Sori* non-indusiate superficial, narrow linear, sub-parallel, unequally anastomosed, i. e., the lines more or less but sparingly united, sometimes only at the ends; the *receptacles* thus reticulated. *Veins* simple or forked from a central costa, parallel below forming elongate oblique areoles, more closely reticulated near the margin forming one or two series of shorter areoles, the ultimate veinlets sometimes free.

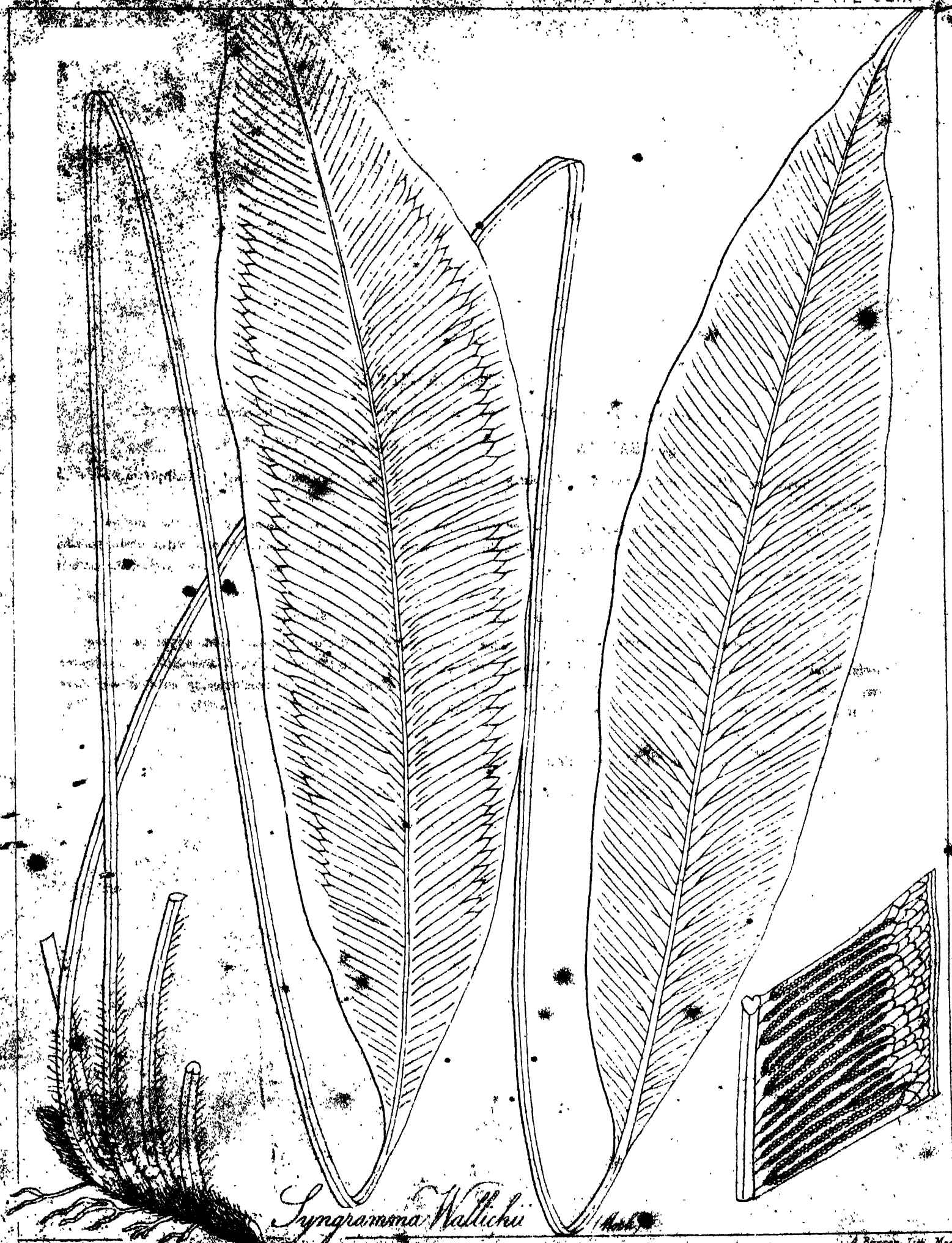
Fronds simple or pinnate sub-membranaceous. Rhizome short erect or creeping—(*Moore.*)

SYNGRAMMA WALLICHII. (*Hook.*) Caudex creeping underground, stipites subfasciculate a span to 1½ foot long black, purple, fronds subcoriaceous-membranaceous simple 6-10 inches long 1½-2 inches wide in the middle broad-lanceolate or subelliptico-acuminated entire narrow cuneato-attenuate at the base, veins numerous approximate simple or forked anastomosing only at the margin into 1-2 rarely more series of a oblong hexagonal areoles, sori narrow-linear on all the straight veins, but scarcely extending to the anastomosing ones.—*Hook. Sp. Fil.* v. 155.

The figure is taken from Sir W. Hooker's *Sp. Fil.*

Hab. Singapore, Borneo, Sarawak, and Labuan.

PLATE No. CLIII.



Syngnathus Wallichii

Barrois del.

A. Baillon. Lith. Madras.

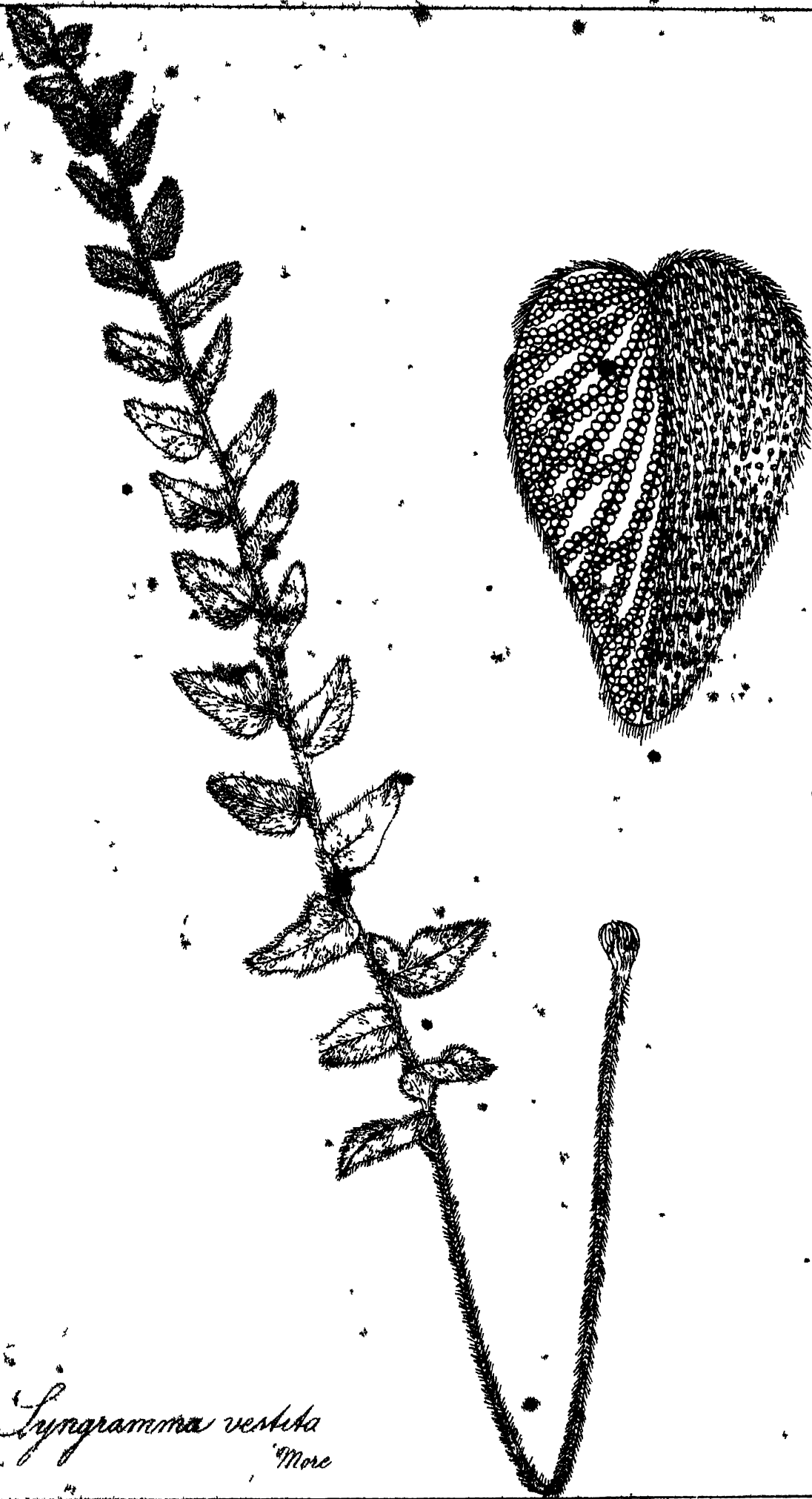
SYNGRAMMA.

SYNGRAMMA VESTITA. (Moore.) Caudex ? base of stipes clothed with golden scales, stipes 2-4 inches long, fronds 6-12 inches long 1-1½ inch broad, everywhere as well as the rachis and stipes velvety with long sericeous golden hairs, most copious beneath, subcoriaceous-membranaceous, pinnated to the apex alternate 7-14 on each side ½ to one inch long, petiolate oblongo-ovate obtuse entire often with an auricle at the superior base, veins simple forked or pinnate where pinnate the lower venules anastomose and form elongated costal areoles, sori universal on the veins. Grammitis ? *Wall.*—*Gymnogramme* (*Eugymnogramme*) *vestita*. *Hook. Sp. Fil.* v. 143 ?

The specimen figured is from N. W. Himalaya, (Hook. Fil. and Thomson.)

Hab. N. W. Himalaya, 5-8,000 feet elevation.

PLATE No. CLIV.



Syngamma vestita
More

§12. HEMIONITIDEÆ.

(a) *Veins pinnate : venules reticulated.*DICTYOCLINE *Moore. Gard. Chron.* 1855. 854.

Gen. char. *Sori* non-indusiate, narrow-linear, superficial on the anastomosing venules, the *receptacles* therefore reticulated. *Veins* pinnate from a central costa; venules transversely anastomosing forming 2 or 3 series of roundish-hexagonal areoles between the primary veins.

Fronds coarse herbaceous pinnate with 2-4 pairs of pinnæ very hairy. *Sori* reticulated between the primary veins. Rhizome short thick decumbent. (*Moore.*)

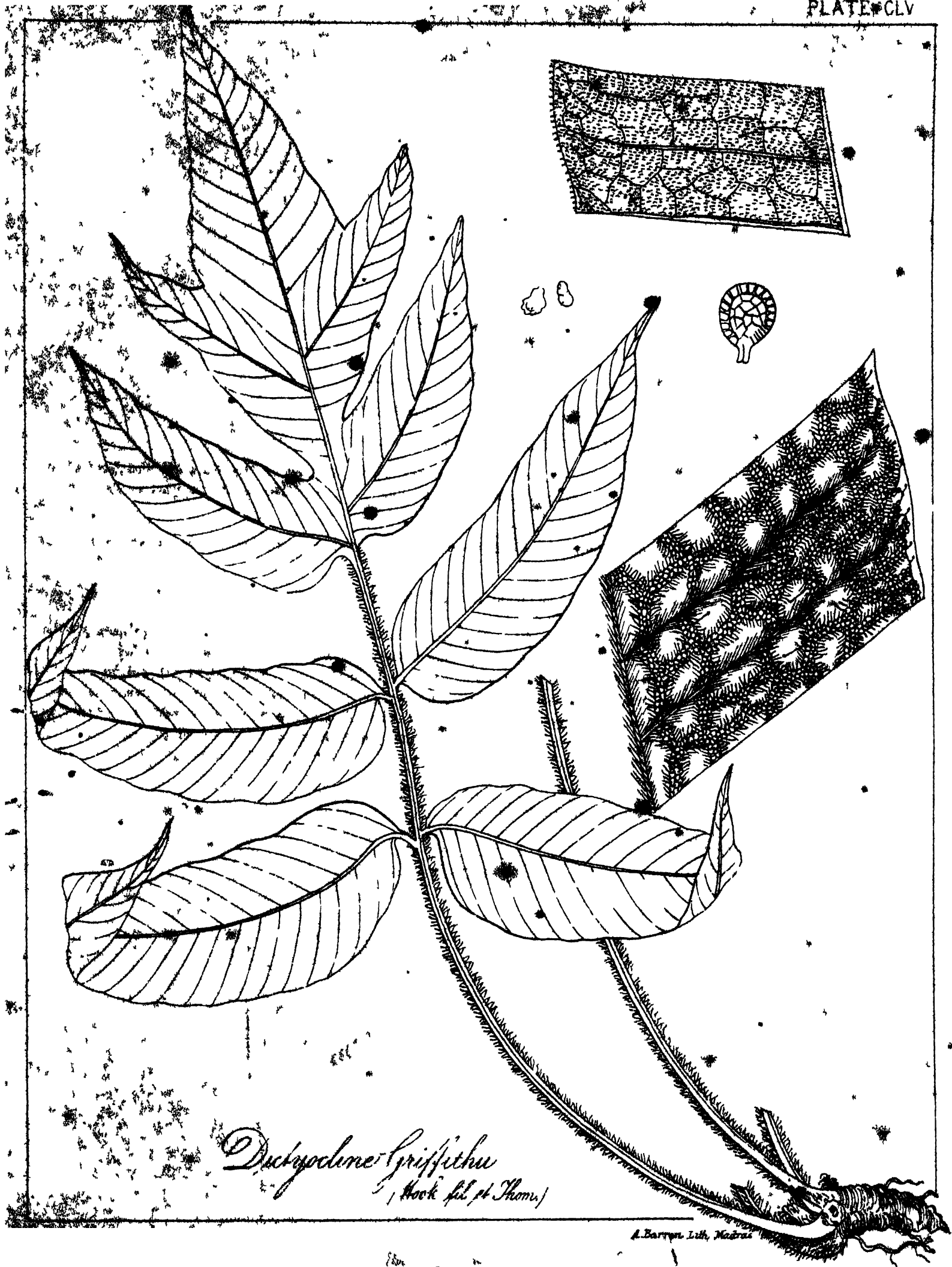
This genus differs from *Hemionitis* in having pinnate venation, and in the *sori* only occurring on the venules.

DICTYOCLINE GRIFFITHII. (*Hook. Fil. et Thomson.*) Caudex? stipites 8-12 inches long villous paleaceous at the base with subulate scales, fronds coriaceous-membranaceous, villous especially on the venation 8-10-14 inches long 6-8 inches broad cordato-ovate acuminate pinnatifid or oblong or broad-ovate and pinnated, pinnæ about nine, 6 inches long by 1-1½ inch wide petiolate oblong subfalcate acuminate entire rotundato-cuneate at the base, terminal pinnæ large-petiolate acuminately pinnatifid, its lowest pair of segments much the longest, the basal pair of pinnæ the largest broad oblong falcate and acuminate more or less lobed the rest gradually small upwards, the apex acuminate entire, pinnæ and larger segments costate with the costæ pinnated the rest of the venation reticulated, costal areoles the largest.—Var. *a. pinnata* *Hemionitis Griffithii.* *Hook. Fil. et Thom.*;—Var. *B. pinnatifida.* *Hemionitis Wilfordii.* *Hook, Fil. Exot. t.* 93. *Hook. Sp. Fil.* v. 193.

The specimen figured is from Khasya (*Hook. Fil. and Thom.*)

Hab. Khasya, Formosa.

PLATE No. CLV.



Dactyloctenium aegyptium
(Hook. fil. et Thoms.)

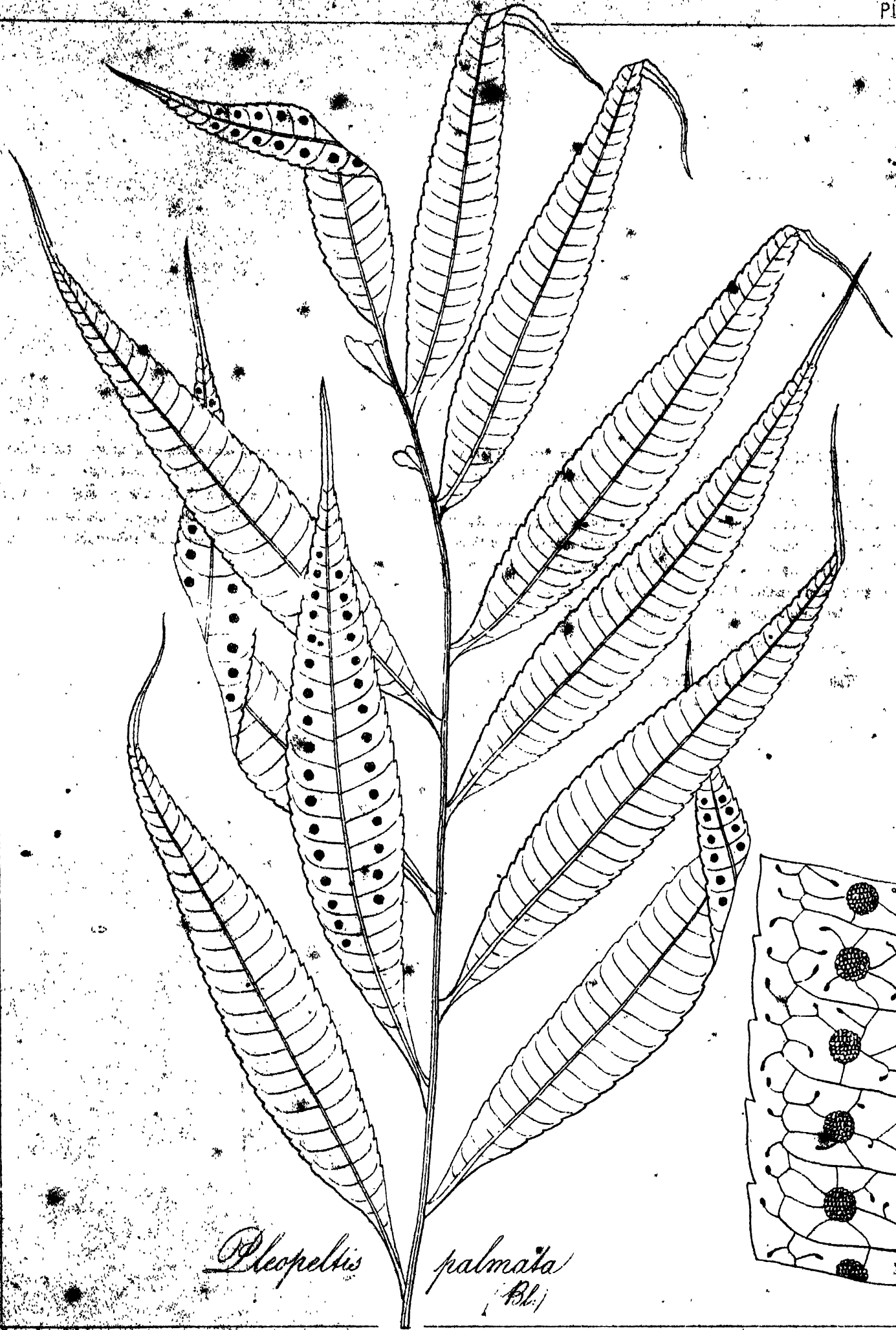
PLEOPELTIS. (See "Ferns of Southern India," p. 57.)

PLEOPELTIS PALMATA (Bl.) Caudex creeping ferruginous with copious large glossy lanceolate long acuminate scales, stipites a span to a foot and more long slender, fronds 6-8 inches long subcoriaceous-membranaceous glabrous broad-ovate acuminate cuneate attenuated at the base deeply pinnatifid or not unfrequently decurrently pinnate or truly pinnate with the always sessile or more or less decurrent pinnæ or segments 3-12 5-6 inches long alternate with very obtuse sinuses terminal one the largest; sterile ones 1-2 inches wide broad lanceolate; fertile ones generally longer, all of them contracted near the base very finely and subcordately acuminate entire, pinnate veins very manifest extending nearly to the margin united by very slender indistinct venules which form 3-4 areoles in which are included free incurved clavate veinlets, sori in a single series. *Hook. Sp. Fil.* v. 89; *Bl. Fil. Jav.* p. 150 t. 64 (not Pr.)—*Drynaria J. Sm.*; Ployp: *Lindleyanum Wall. Cat.* n. 304. *Phymatodes Meyeniana. Presl.*

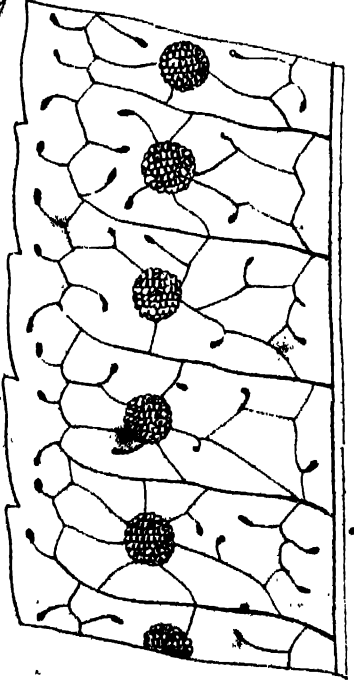
The specimen figured is from Singapore.

Hab. Java: Island of Ternate, Luzon, Singapore, Penang.

PLATE No. CLVI.



Pleopeltis palmata
(Bl.)



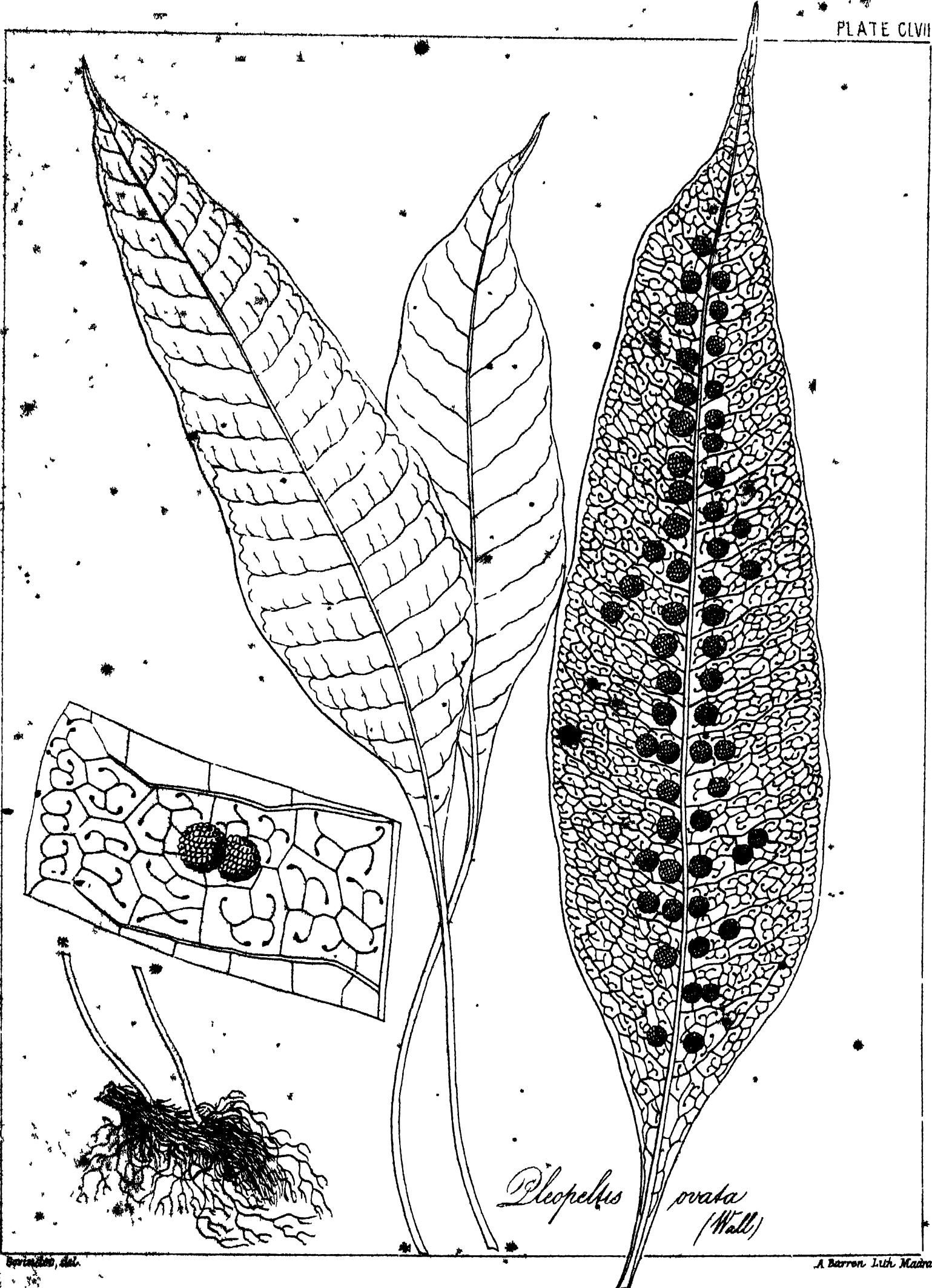
PLEOPELTIS.

PLEOPELTIS OVATA. (Wall.) Caudex creeping apparently under-ground slightly paleaceous, stipites distant 3-8 inches long sparsely paleaceous below, fronds firm-membranaceous glabrous 5-11 inches long 2-3 inches broad, ovate or ovato-lanceolate acuminate entire the broad base rather suddenly attenuated so as to form a decurrent wing on the upper part of the stipes, costules very evident slightly prominent straight or flexuose connected by transverse veins on which the sori are inserted, the areoles are filled with reticulated veins with or without free included veinlets, the sori are very large and prominent when mature chiefly confined to the centre of the frond distant from the margin scarcely arranged in series, occasionally two are confluent. *Hook. Sp. Fil.* v. 64 ; *Wall. in Hook. and Grev. Ic. Fil.* t. 41.

The specimen figured is from the Khasya Hills, (Hook Fil. and Thomson.)

Hab. Khasya, Bhootan, Sikkim—Himalaya, Nepal.

PLATE No. CLVII.



Pleopeltis ovata
(Wall.)

Spencer, del.

A. Barron Lith. Madras

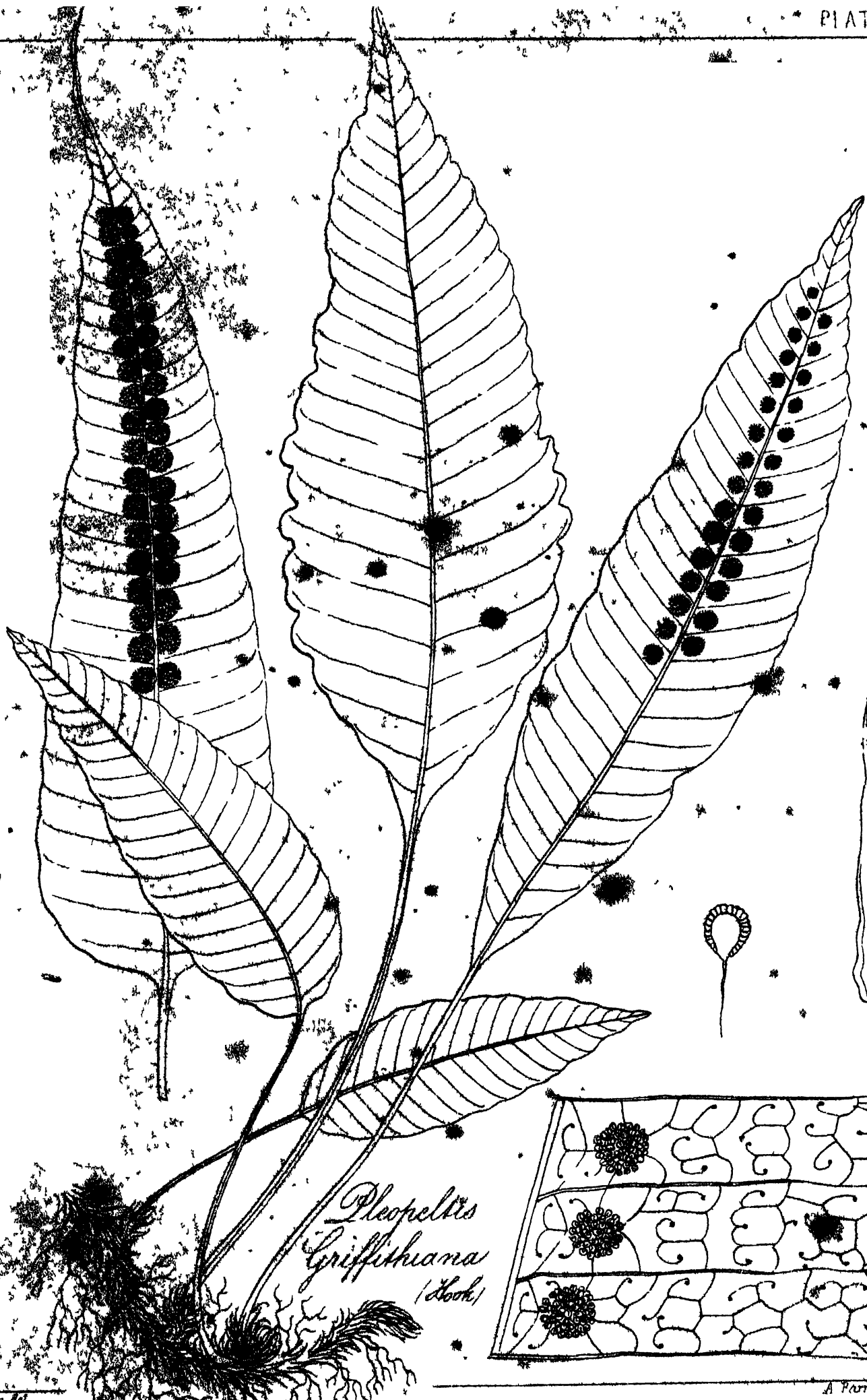
PLEOPELTIS.

PLEOPELTIS GRIFFITHIANA. (Hook.) Caudex long creeping palaceous with long subulate ferruginous scales, stipites very remote 3-6 inches long, fronds chartaceo-coriaceous glabrous 6-8 inches long $1\frac{1}{2}$ -2 inches broad oblongo or ovato-lanceolate entire or obsolete crenate, acuminate, cuneate at the base sometimes glaucous beneath, the margin thickened, costules very distinct straight prominent beneath, the rest of venation less distinct more or less anastomosing with copious free veinlets in the areoles, sori very large globose compital forming a single series on each side of and close to the costa.—*Hook. Sp. Fil.* v. 62 ; *Cent. of Ferns* t. 51 and *Ic. Pl.* t. 951.

The specimen figured is from Khasya, (Hook. Fil. and Thomson.)

Hab. Brootan, Mishmee, Khasya.

PLATE No. CLVIII.



Pleopeltis
Griffithiana
(Hook.)

Govindoo, del.

A. Parren, lith. Madras

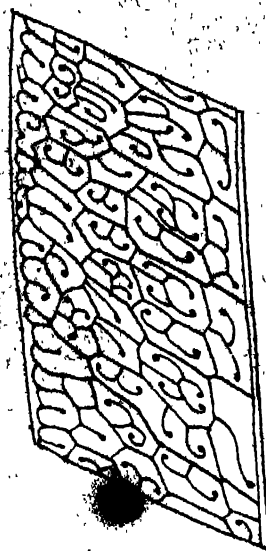
PLEOPELTIS.

PLEOPELTIS ROSTRATA. (Hook.) Caudex very long filiform creeping branched setaceous with very slender subulate scales, stipites remote 1-2 inches long, fronds scarcely dimorphous from 2-4½ inches long ½ an inch to an inch wide coriaceous-opaque glabrous lanceolate or elliptical or ovato-lanceolate rather suddenly subrostrato-acuminate; sterile ones often the shortest and most obtuse, venation internal obscure, veins copiously reticulated, areoles mostly oblong angular obliquely directed from the costa (no costules) each including one simple or branched veinlet sori very large in a single series on each side and near to the costa occupying the upper half of the frond or nearly the whole length. *Hook. Sp. Fil.* v. 66; *Cent of Ferns* t. 53, or *Jc. Pl.* t. 953.

The specimen figured is from Khasya, (Hook. Fil. and Thomson.)

Hab. Eastern Himalaya, Khasya, Mishmee, Bhootan.

PLATE No. CLIX.



Pleopeltis postrata.
(Hook.)

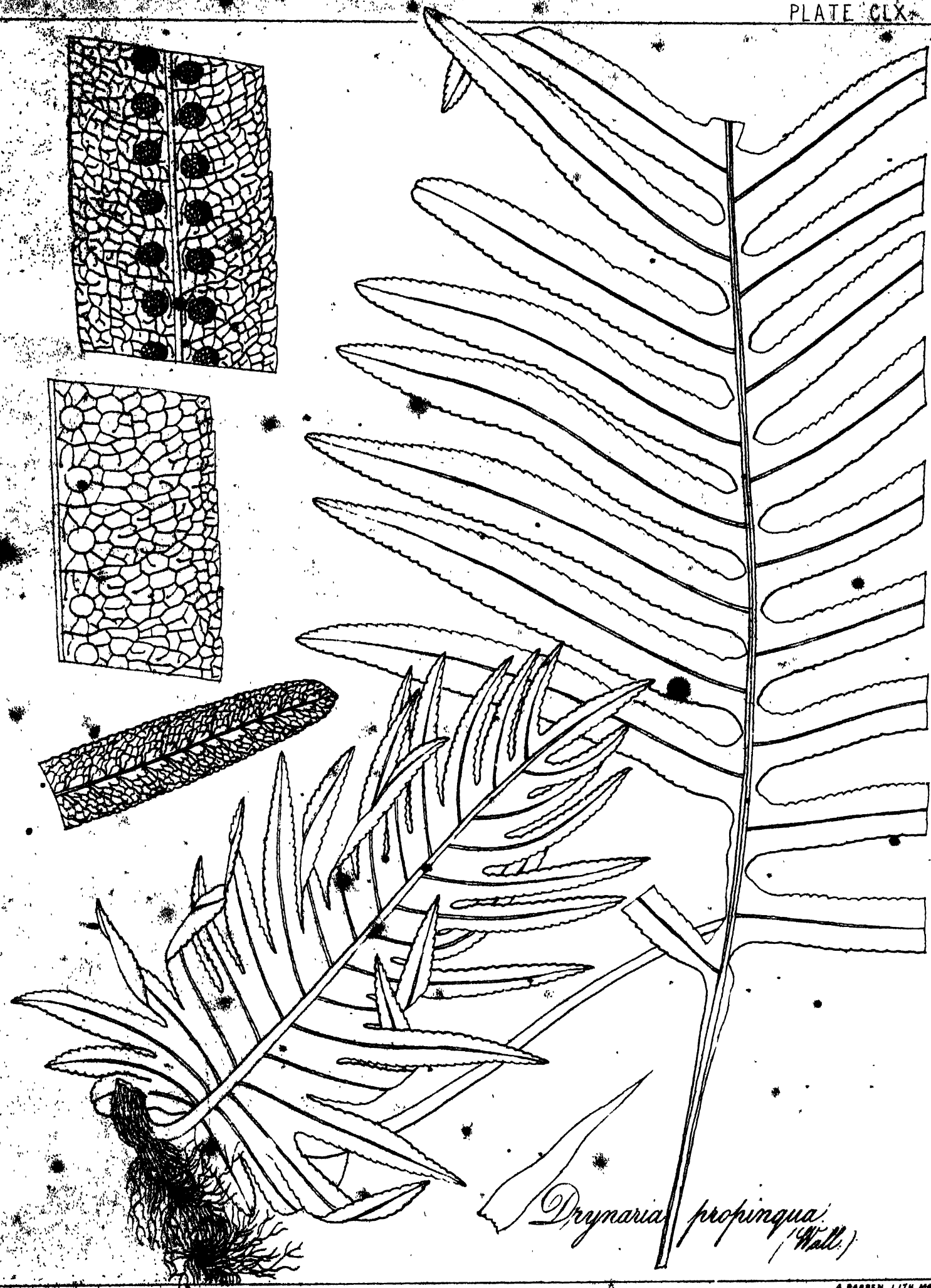
DRYNARIA. (See "Ferns of Southern India," p. 63.)

DRYNARIA PROPINQUA. (Wall.) Caudex long very stout creeping densely clothed with lanceolato-subulate delicate membranaceous fringed ferruginous scales, fronds coriaceous-membranaceous dimorphous; sterile 4-6 inches and more long firm and hard scarious-membranaceous brown sessile cordato-ovate deeply pinnatifid with narrow oblong acute rarely obtuse segments; fertile ones long stipulate 1-2 feet long oblong-ovate deeply almost to the rachis pinnatifid, segments 4 inches to a span or more long linear-oblong acute or acuminate subentire (one specimen from Khasya deeply sinuato-pinnatifid) lowest ones distant and subdecurrent, venation manifest slight elevated (so as to give a sculptured character to the surface when dry) costules subreniform flexuose connected by transverse veins forming 4-5 areoles of which the costal one only is soriferous, ultimate small areoles subquadrangular often with free included veinlets, sori forming only a single series close to the costa. *Hook. Sp. Fil.* v. 97; *Wall. Cat. n.* 293.—*Phymatodes Presl*;—*Polp. Willdenovii. Bl. Fil. Jav.* p. 156 t. 66?

The specimen figured is from Simla.

Hab. Nepaul, Simla, Sikkim, Khasya, Assam, (5-7,000 alt.), Tropical Africa, Prince's Island, Fernando Po.

PLATE No. CLX.



Drynaria propinqua (Wall.)

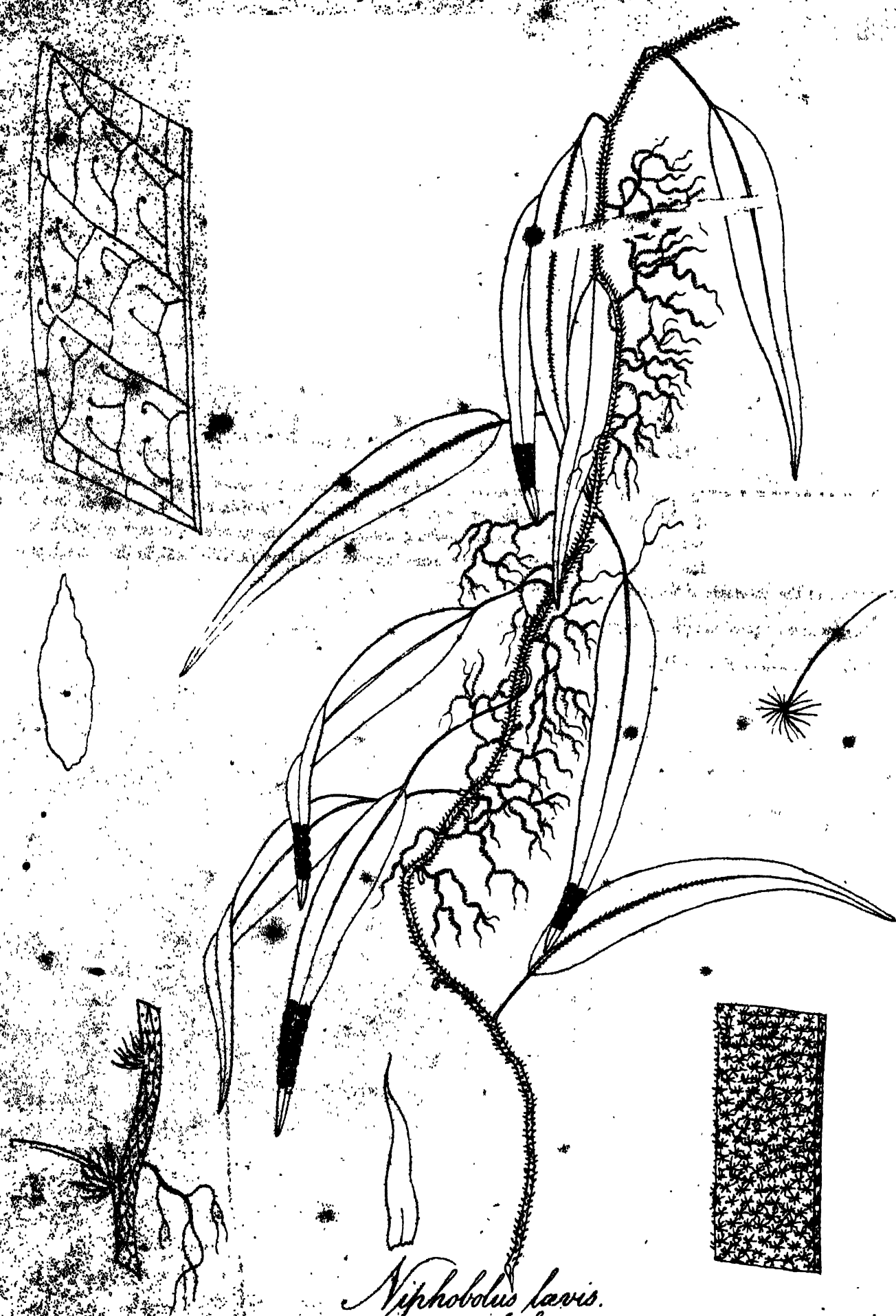
NIPHOBOLUS. (See "Ferns of Southern India," p. 61.)

NIPHOBOLUS LAEVIS. (J. Sm.) Caudex creeping clothed with linear setaceous scales, stipites distant $\frac{1}{2}$ an inch to 2 inches long furnished with a tuft of scales at their base, fronds coriaceous linear lanceolate $2\frac{1}{2}$ to 6 inches long, $\frac{1}{4}$ to $\frac{3}{4}$ of an inch broad, glabrous above hoary with stellated pubescence beneath, venation obscure, areoles between the costules 3, in each of which are 1, 2, 3 clavate veinlets variously directed free or rarely joined to the base of the areole above. Sori large partially sunk in the tomentum covering nearly the whole of the underside of the frond or confined to the apex.

The specimen figured is from Khasya, (Dr. Thomson.)

Hab. Himalayas, Khasya Hills.

PLATE No. CLXI.



Nipholobolus laevis.
(J. Sm.)

NIPHOBOLUS.

NIPHOBOLUS DETERGIBILIS. (J. Sm.) Caudex rather stout densely fibroso-radicant paleaceous especially about the base of the stipites with finely subulate ferruginous scales, stipites 4-6-8 inches long aggregated clothed as is the whole plant with a dense compact mass of whitish or ferruginous stellated tomentum which not unfrequently peels off in dense cottony masses from the upper side of the fronds leaving that part quite naked and glabrous, fronds from 4-16 inches long $\frac{3}{4}$ -1 $\frac{1}{2}$ inch broad carnosio-coriaceous younger ones often ovato-acuminate mature ones lanceolate finely acuminate subsinuate moderately attenuate decurrent not unfrequently broader and subhastate at the base then suddenly cuneate, sometimes wrinkled above by the impressions of the sori from the other side and obscurely nigro-punctate, below the stellated tomentum is long retained, venation immersed, costules indistinct, intervening areoles 9-15, veinlets 3-5 irregular free or meeting a veinlet from the base of the areole above sori scarcely sunk small and but slightly elevated above the tomentum very copious arranged with great regularity.—*Hook. Sp. Fil.* v. 49 ;—*Polypodium vestitum. Wall. Ms.*

The specimen figured is from the Himalayas (Dr. Stewart.)

Hab. Chiefly North Bengal and along the lower ranges of the Himalayas from very low altitudes of Silhet and Assam to 3,500 feet in Kumaon—from Simla in the west to Bhootan in the east. Nepal.

PLATE No. CLXII.



Nipholobolus detergibilis
(J. Sm.)

GONIOPHLEBIUM. (See page 5.)

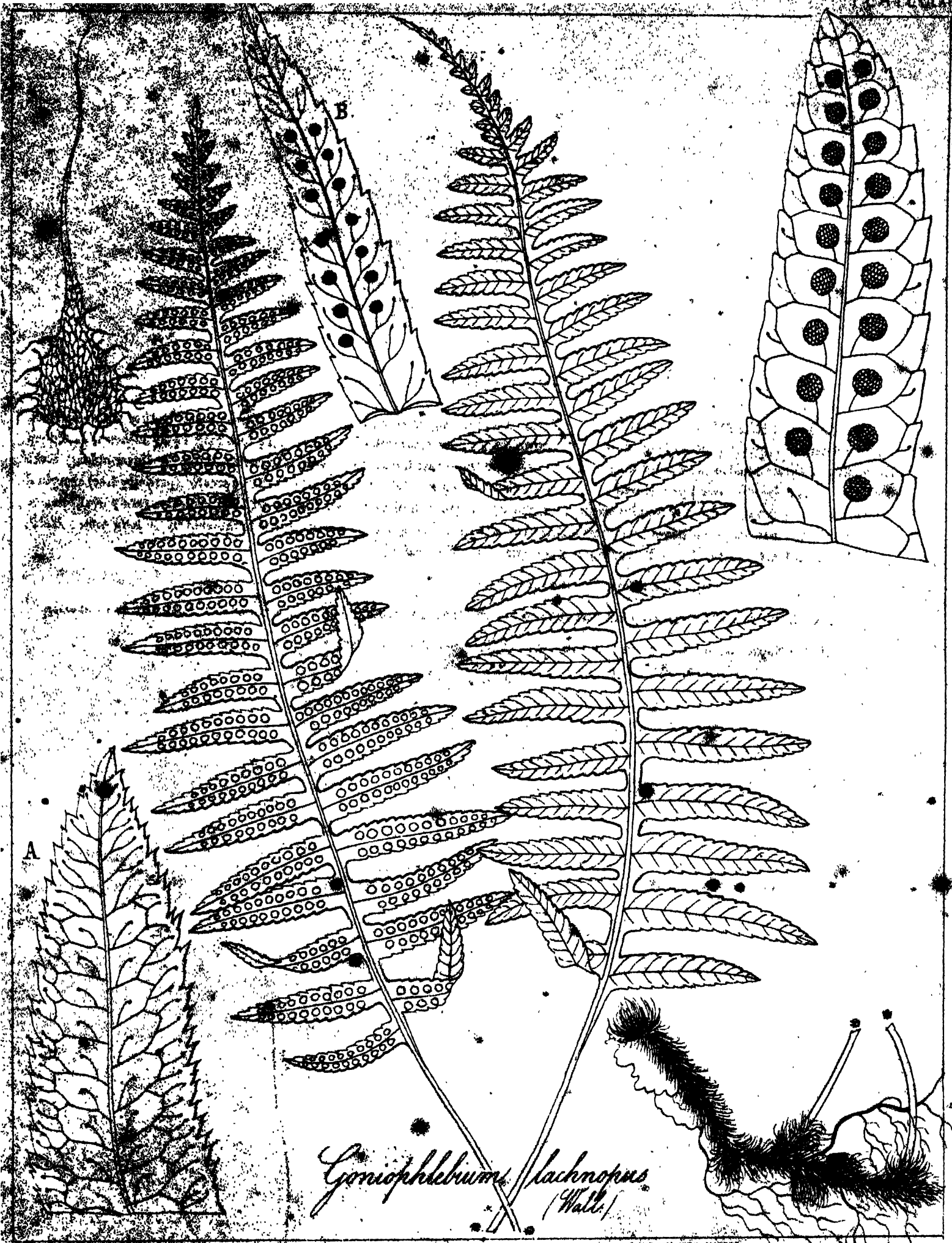
GONIOPHLEBIUM LACHNOPUS. (Wall.) Caudex long creeping thick as a writing-pen densely clothed with long black setaceous bristles, stipes 2-4 inches long stramineous-brown, fronds membranaceous 6-8 inches to $1\frac{1}{2}$ foot long $1\frac{1}{2}$ - $3\frac{1}{2}$ inches wide oblong terminating in an acuminate nearly entire apex, deeply nearly to the rachis pectinato-pinnatifid, segments linear or linear-oblong acute or obtuse, dentato serrate, lowest pair sometimes deflexed, veins forming a costal soriferous series of large areoles (partially free) marginal veinlets short free clavate, soriferous veinlet arising from the side of the vein distant from the costule, sori orbicular rarely oval, nearer the costa than the margin, rachis beneath often subpaleaceous with orbicular spinuloso-dentate scales terminated by a long seta. *Hook. Sp. Fil.* v. 25; *Wall. Cat. n.* 310.—*Polypodium Fieldingianum.* *Kze.—Mett. Polyp.* 75.

The specimen figured is from Simla, (Dr. Stewart.)

Fig. A. is a pinna of a curiously cut variety from Sikkim, (Dr. Anderson.) Fig. B. is a pinna of a frond with free venation.

Hab. Nepaul, Kumaon, Khasya (4-6,000 feet) Sikkim, (9-11,000 feet) Simla, Kumaon (7,000 feet.)

PLATE No. CLXIII.



Goniophlebium lachnopus
(Wall.)

§ 14—PLATYLOMEÆ.

(b.) *Fertile divisions siliculiform.*

CRYPTOGRAMMA. R. Br. App. Frankl. Journ. 767.

(Allosori Sp. Auct.;—Gymnogrammatis Sp. Presl.;—Phorolobus Sp. Fée.)

Gen. char. *Sori* spuriously-indusiate, oblong or linear, at length laterally confluent into an intramarginal band, covered by the revolute attenuated indusiiform margins of the pinnules; the *receptacles* also oblong or linear, near the apices of the veins. Veins simple or forked, from a central costa, which is sometimes evanescent in the sterile fronds; venules free.

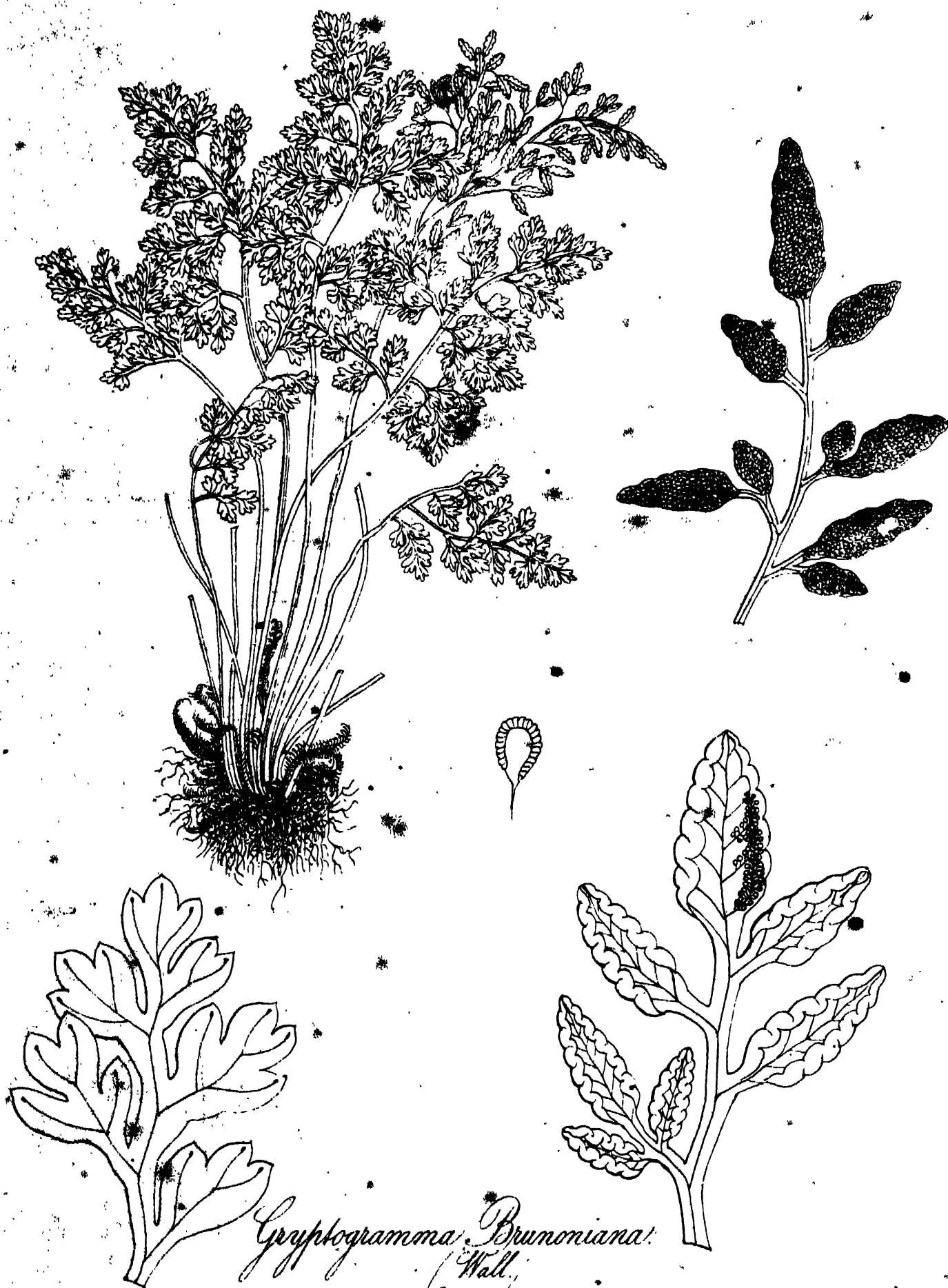
Fronds dimorphous, dwarf, herbaceous, bi-tri-pinnate, the fertile contracted, *i. e.*, with revolute siliculiform pinnules. Rhizome short decumbent. Differs from *Allosorus* in having oblong oblique not punctiform receptacles. (Moore.)

CRYPTOGRAMMA BRUNONIANA. (Wall.) Caudex short thick subrepent, roots fibrous, fronds erect stout somewhat rigid, pinnules of the sterile fronds of two kinds, subovate deeply cut into 2-5 oblong segments, rarely elliptical and pinnatifid serrated. Those of the mature fertile fronds rather broad oblong with the margins spread open (not permanently revolute). *Wall. Cat.* 396. *Hook. et Grev. Ic. Fil.* t. 158. *C. crispa*, var. *B.* *Hook. Sp. Fil.* ii. 129.—*Gymnogramme Brunoniana*. *Presl. Tent. Pterid.* p. 219.—*Phorolobus Brunonianus* *Fée. Gen. Fil.* p. 131.

The specimen figured is from Sikkim-Himalaya elev. 13,000 feet (Dr. Thomson.)

Hab. North India, Kumaon, 12,000 feet.—Balti. N. W, Thibet. Shayak Valley 9,000 feet, above Simla, Sikkim-Himalaya. 11-13,000 feet, Choor.

PLATE No. CLXIV.



Cryptogramma Brunoniana
Wall.

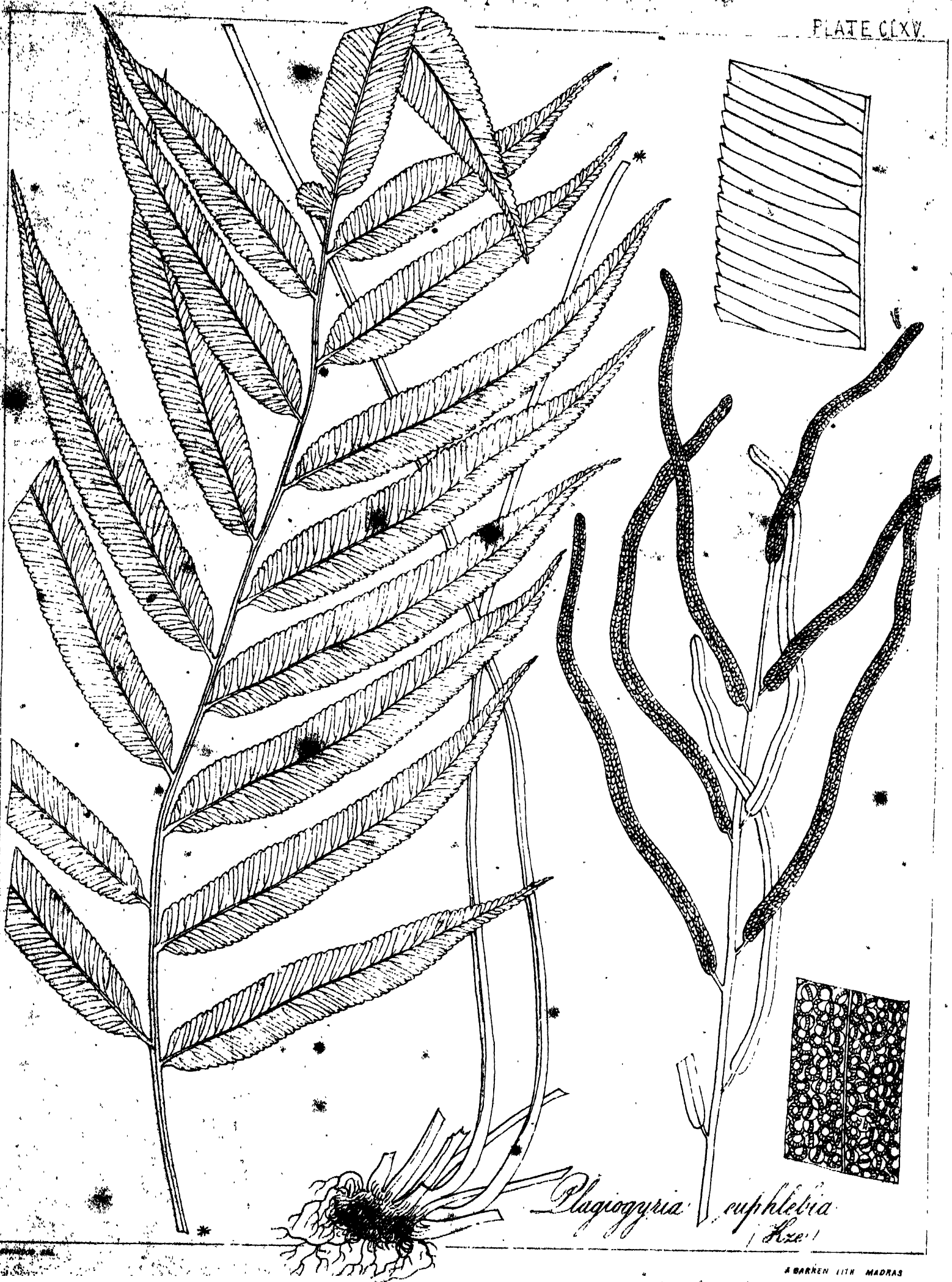
PLAGIOGYRIA. (See page 51.)

PLAGIOGYRIA EUPHLEBIA. (Kze.) Caudex stout woody a foot high, fronds caespitose on long stipites incrassated triquetrous and carnosae and bearing spongy glands at the base, fronds pinnate throughout 1-2 feet long subchartaceous, olive-brown when dry, sterile ones broadly ovate-lanceolate, pinnae erecto-patent 5-6 inches long remote uniform the ultimate quite free larger than the rest, all sessile or the lower ones shortly but distinctly petioled elongato-lanceolate quite cuneate at the base, the margin bluntly and rather obscurely serrated the acuminate apex strongly serrated the base beneath destitute of glands, veins rather distant mostly once forked, fertile fronds narrower and more oblong, pinnae linear or broad-linear elongated obtuse, capsules clothing the whole under-side between the costa and the brown membranaceous involucre.—*Hook. Sp. Fil.* iii. 20.—*Kze. in Bot. Zeit.* vi. 521.—*Acrostichum triquetrum. Wall. Cat. n. 23 in part*;—*Olfersia triquetra Tent. Pter. p. 234*.—*Stenochlaena triquetra J. Sm. in Hook Journ. of Bot.* iv. p. 149.

The specimen figured is from Khasya, (Dr. Thomson.)

Hab. Nepaul, Assam, Khasya (alt. 6,000), Japan.

PLATE No. CLXV.



Plagiogyria euphlebia
H. B. K.

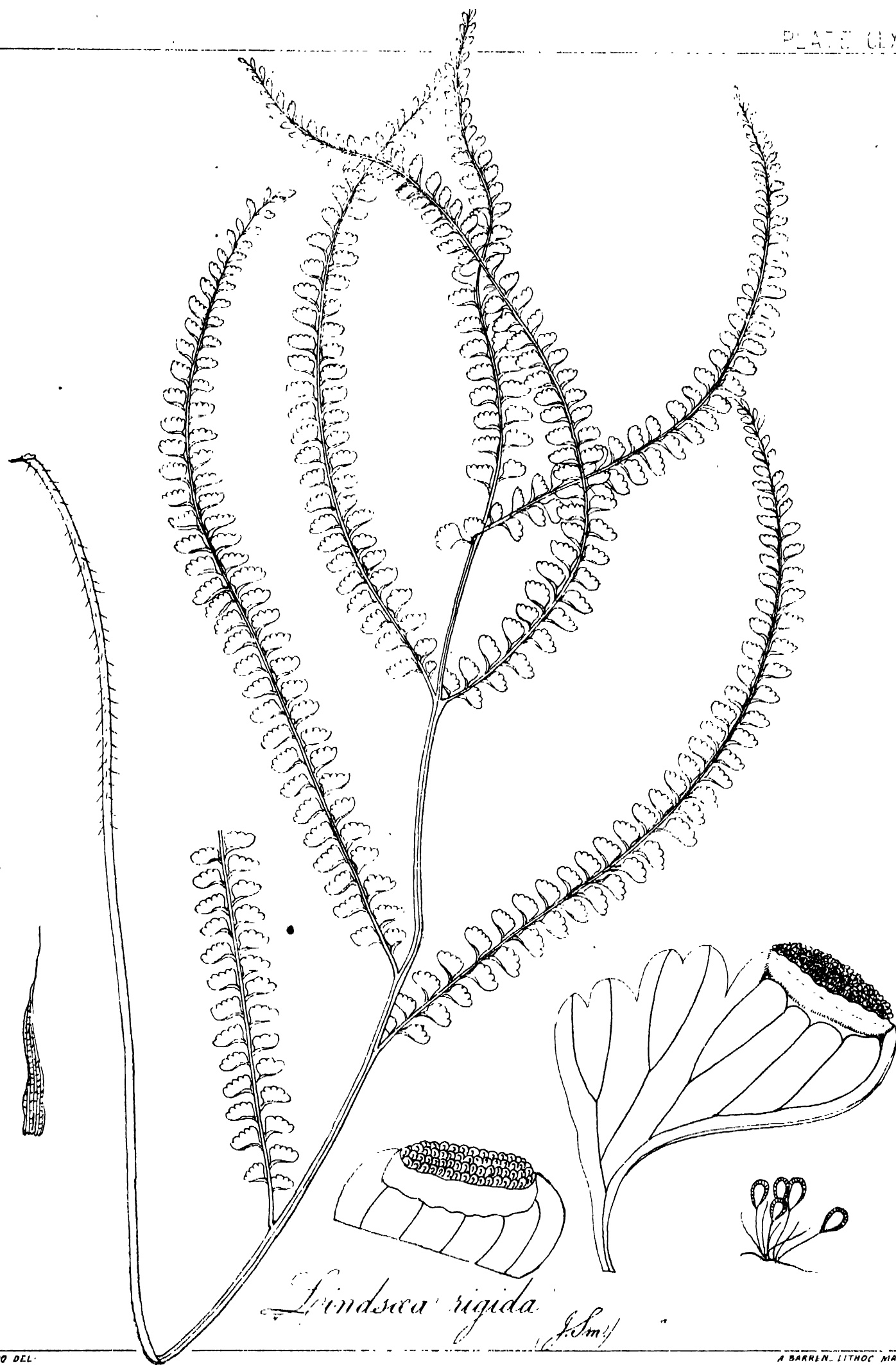
LINDSÆA. (See "Ferns of Southern India," p. 7.)

LINDSÆA RIGIDA. (J. Sm.) Caudex long creeping scaly, rough with short distant inconspicuous prickles, frond bipinnate rigid (rufescent) subfalcate, pinnae 7-9 remote linear alternate falcate, terminal one very long, pinnules approximate coriaceous flabellate or rhomboid—oblong—flabellate, upper base truncate, lower margins straight or slightly arched, upper one semi-circular lobed and crenated margined, veins very prominent on both sides, sori abbreviated quite marginal on one or two terminal lobes, involucres coriaceous. *Hook. Sp. Fil.* i. 217. *J. Sm. in Hook. Journ. of Bot.* iii. p. 415.

The specimen figured is from Malacca.

Hab. Malacca, Mount Ophir.

PLATE No. CLXVI.



Lindsaea rigida J. Sm.

ADIANTUM. (See "Forms of Southern India," p. 1.)

ADIANTUM PEDATUM. (L.) Frond flabelliform bipartito-pedately divided tripinnate, secondary pinnae lanceolate, pinnules membranaceous dimidiate oblong antorsely subfalcate broadest at the superior truncated base very obtuse, lowest ones triangular-cuneate all petiolate, superior margin obtusely lobed, lobes soriferous, sori oblong rarely curved, stipes and rachis ebensous glabrous. *Hook. Sp. Fil.* ii. 28. *Linn. Sp. Pl.* 1557. *Sw. Syn. Fil.* 121 ;—*Adiantum boreale Pr. Tent. Pter.* p. 158.

The specimen figured is from the Himalayas, (Dr. Stewart.)

Hab. Northern India, Kumaon, Jumnotri, North America, Virginia to Canada (Lake Huron); North West America, California to Sitka; Unalaschka.

PLATE No. CLXVII.



Indiantum pedatum

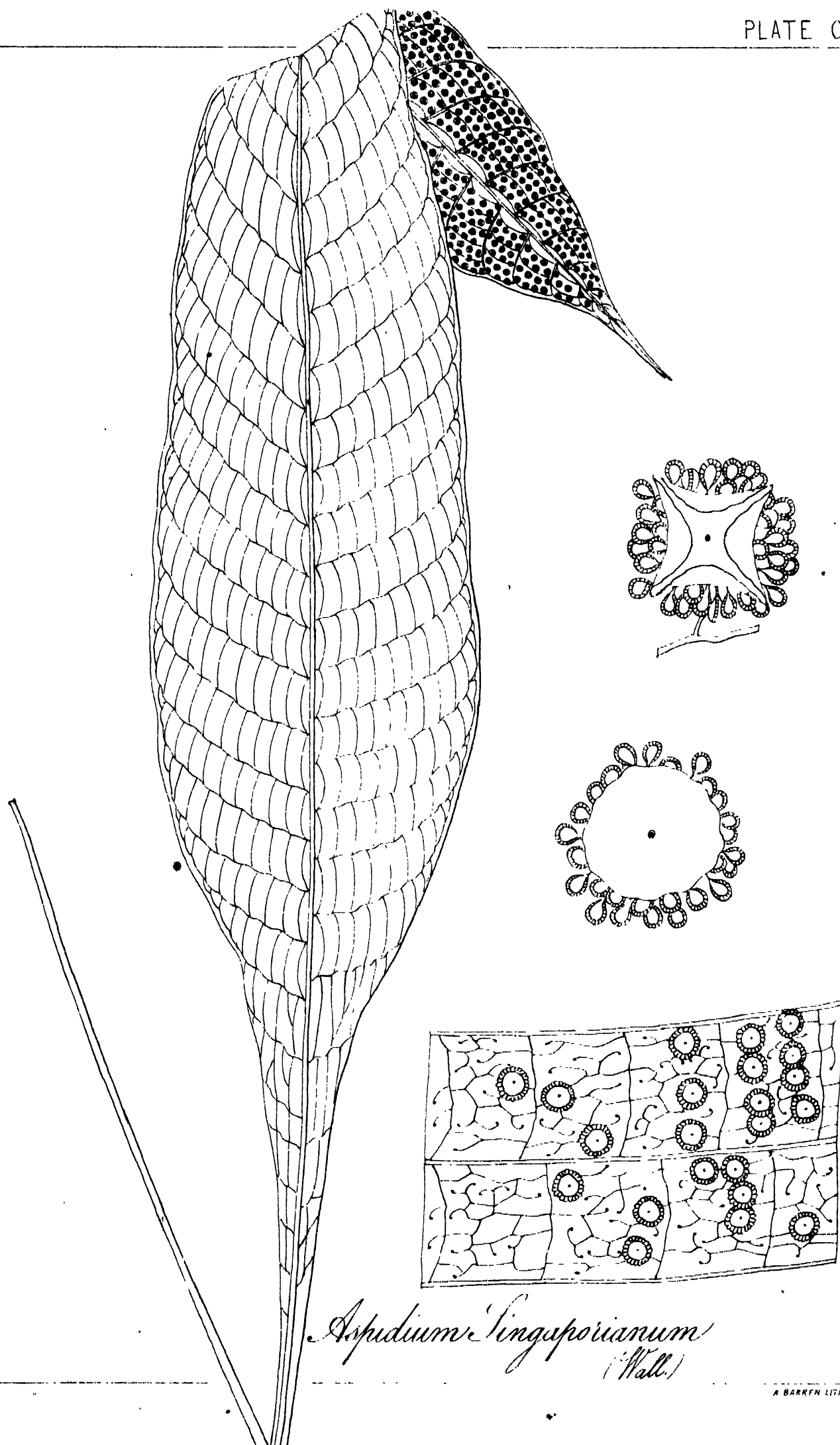
ASPIDIUM. (See "Ferns of Southern India," p. 40.)

ASPIDIUM SINGAPORIANUM. (Wall.) Caudex more or less creeping very fibrous, stipites approximate sometimes tufted 6-12-14 inches long sparsely setosely subalato-paleaceous, fronds 6-12 inches long firm membranaceo-coriaceous (dark brown when dry), ovate or oblong, much acuminate at the apex, suddenly or generally long, decurrent at the base quite entire, costa prominent beneath, primary veins horizontally patent subfalcate united by transverse arched ones, the areoles of which enclose netted veinlets, the ultimate ones free; sori forming transverse arched lines in double rows between secondary (transverse) veins about six in each row, involucre orbicular peltate. *Hook. Sp. Fil.* iv. 42. *Wall. Cat. n.* 374;—*Podopeltis*, *Fée. Gen. Fil.* p. 286. *t.* 23 *A.*;—*Polypodium Phyllitidis* *Roxb. in Calc. Journ. Nat. Hist.* iv. p. 483.

The specimen figured is from Singapore.

Hab. Malay Islands, Singapore, Penang, Malacca.

PLATE No. CLXVIII.



Aspidium Singaporianum
(Wall.)

SAGENIA. (See "Ferns of Southern India," p. 27.)

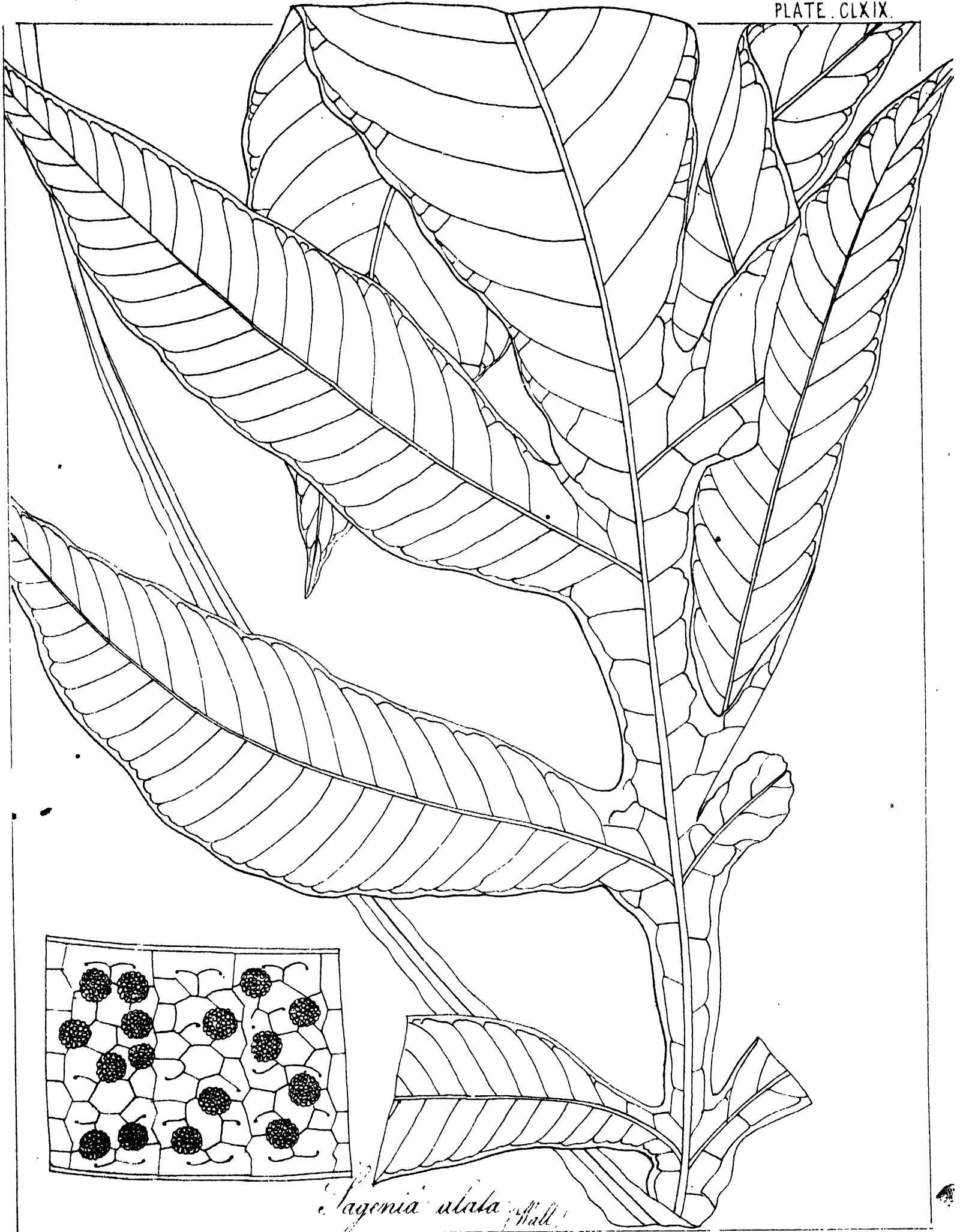
SAGENIA ALATA. (Wall.) Caudex creeping? Stipites rather distant 1-2 feet long but winged a long way down sometimes almost to the base and there subulato-paleaceous, fronds subcoriaceous-membranaceous 2-3 feet and more long oblong deeply pinnatifid with 4-5 pairs of distant oblong (6-18 inches long and 1-2 wide) or strap-shaped acuminate segments, inferior ones entire or bipartite, primary veins horizontally patent slender, connected by transverse zigzag secondary ones forming areoles which include anastomosing veins with free veinlets, sori small very copious scattered without order arising from reticulations (hence compital) not extending to the margin, involucre small cordate. *Hook. Sp. Fil.* iv. 47. *Wall. Cat.* n. 378 ;—*Bathmium Fée.* ;—*Aspidium vastum*, *Bl. En.* p. 142.

Very nearly allied to *S. pteropus* (Kze.), but the sori are copious and scattered without order, instead of being in two rows between the primary veins, the magnified portion in the figure represents a portion of the frond between two primary veins.

The specimen figured is from the Khasya Hills, the involucre had all fallen off and so are not represented.

Hab. Sylhet, Khasya, Assam, Malacca, Singapore, Borneo, Java.

PLATE No. CLXIX



Lagenia ulata Hall.

SAGENIA.

SAGENIA VARIOLOSA. (Wall.) Caudex stout creeping, stipites approximate subcaespitose a span to 1-1½ foot long, sparingly paleaceous at the base, fronds coriaceous-membranaceous a span to a foot and more long, glabrous cordate or cordato-ovate acuminate trifoliate or more frequently pinnate with two or three nearly opposite pairs of pinnae and a larger terminal one more or less petiolate, lowest pair large half-ovate bifid or bipartite or bifoliate, intermediate pairs lanceolate lobato-pinnatifid, inferior lobes the longest, terminal one sub-rhomboidal below, deeply pinnatifid with long acuminate entire of lobed segments, primary veins from the costa patent slender more or less waved remote, the rest of the veins uniformly anastomosing with areoles enclosing free simple or forked veinlets, sori scattered most copious near the margins of the pinnae compital or more frequently terminal on a vein within a large areole. *Hook. Sp. Fil.* iv. 51. *Wall. Cat.* n. 379;—*Sagenia variolata Moore*?—*Aspidium coadunatum*? in part *Mett. Asp.* p. 281.

Very closely allied to *Sagenia coadunata*.

The figure represents the upper portion of a frond and is taken from a specimen from Parasnath, Bengal, (Dr. Thomson.)

Hab. Amherst, Tavoy, Penang, Moulmein, Chittagong, Mergui, Parasnath, Telyn above Sylhet.

PLATE No. CLXX.



Lagenia variclosa
(Wall.)

POLYPODIEÆ

Margins of the fronds revolute, indusoid (i.e., sori spuriously indusiate).

STRUTHIOPTERIS — Willd Mag Nat Ber 1809 160

(*Onoclea*, *Berukandi* and *Auct.* *Osmandæ* Sp Linnæus)

Gen Char. *Sori* spuriously indusiate, rotundate, approximate, at length becoming sub-confluent, covered by the revolute-convolute attenuated (membranaceo-scariose) margin of the frond, which simulates an universal indusium, the *receptacles* medial prominent. *Veins* simple or forked, from a central costa, *venules* free.

Fronds demorphous, the sterile herbaceous pinnato-pinnatifid, the fertile pinnate, with the pinnae much contracted moniliform, the margins rolled inwards so as to cover the sori, Rhizome erect caudiciform, producing stolones. (*Moore.*)

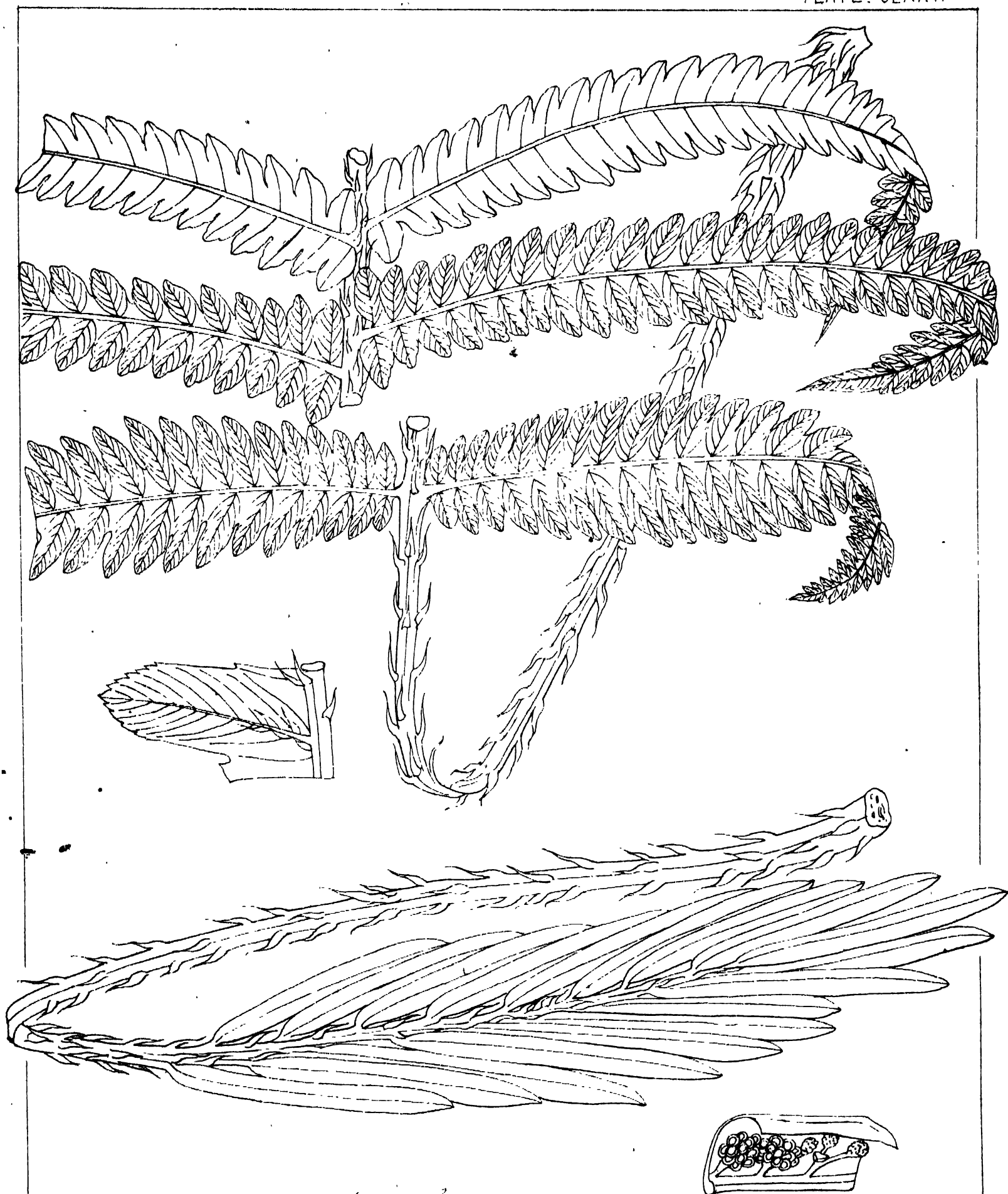
A genus with a very doubtful resting place in the classification of ferns. Sir Wm. Hooker unites it with Onoclea, a genus with anastomosing venation and a cucullate membranaceous indusium of doubtful structure, and states that a very fragile inferior involucre has been detected in Struthiopteris Germanica (an allied species), although he could detect nothing of the sort in dried specimens of this species. Mettenius also unites the 2 genera and places them next to Woodsia. Moore follows Willdenow in keeping the 2 genera distinct, but places the present genus in Polypodieæ, and Onoclea in the Aspidieæ.

STRUTHIOPTERIS ORIENTALIS (Hook) Fronds 1 2½ feet long ovato-oblong not attenuated below, fertile fronds oblong, often 2-feet long contracted broad linear-oblong flattened 2-edged, the refracted margins at first covering the whole back of the frond dark purple brown glossy involucriform, entire at the edge, at length spreading, torn at the margin and exposing the fructification which is eventually confluent in a continuous line, stipes rachis and costa deciduously paleaceous. *Onoclea* (*Struthiopteris*) *Orientalis* Hook 2nd Cent. of Ferns, tab 4, Sp Pl 1v 161

The figure is taken from Hooker's 2nd Cent of Ferns

Hab Sikkim Himalaya (elev 12 000 feet) Assam Hukodadi Japan

PLATE No CLXXI



Trachipteris orientalis.
Hook.

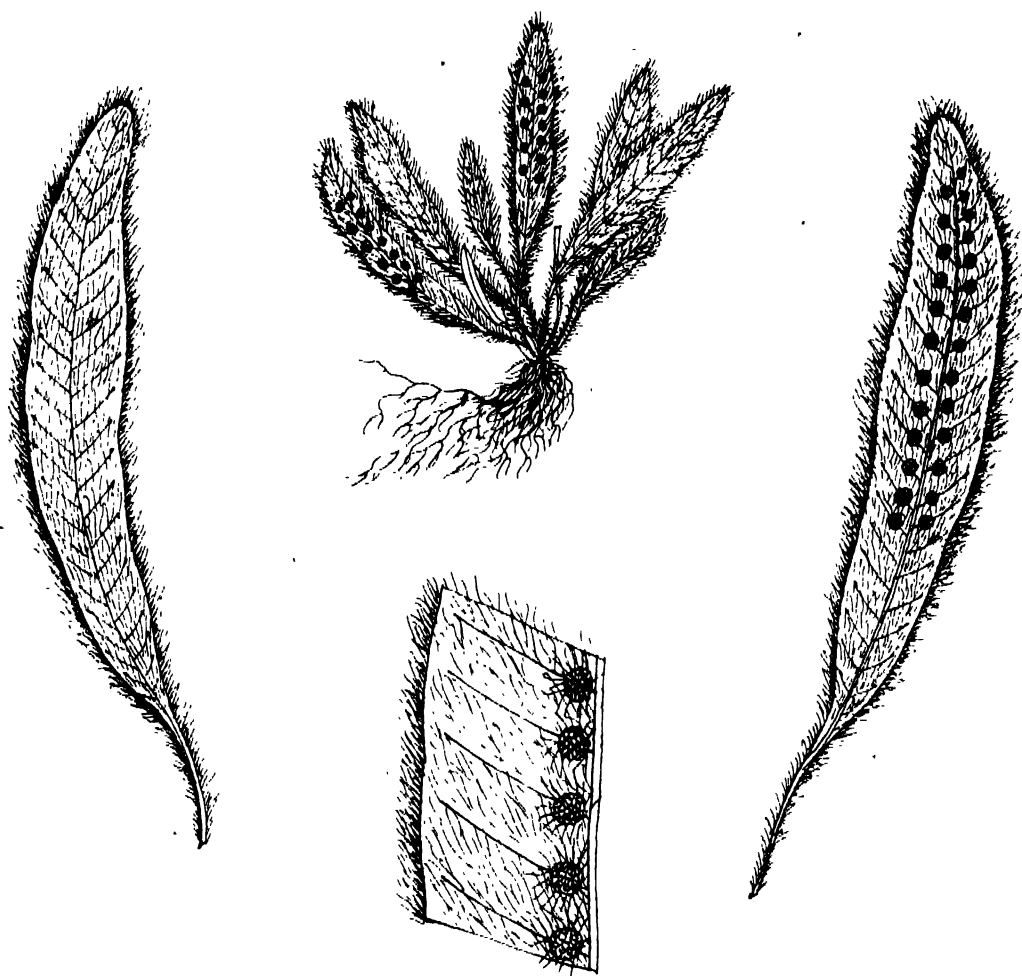
POLYPODIUM. (See "Ferns of Southern India," p. 54.)

POLYPODIUM LASIOSORUM. (Hook.) Caudex very small indistinct radiculoso-caespitose, stipites tufted $\frac{1}{2}$ an inch and rather more long slender filiform villous with patent ferruginous hairs, fronds subcoriaceous-membranaceous spathulato-lanceolate obtuse quite entire much attenuated at the base rather densely villous with long patent soft ferruginous hairs more or less deciduous in age, and ciliated on the margin with short hairs, veins simple never forked not extending to the margin, slightly thickened at the apex, sori globose occupying the upper half or $\frac{2}{3}$ ds of the frond, one on each vein near the base, copious hairs are intermixed with the capsules. *Hook. Sp. Fl.* iv. 106;—*Grammitis pusilla*, γ lasiosorum. *Bl. En. Fl. Jav.* p. 110 f. 6, —*Grammitis nana*, *Fée, Gme. Mém.* p. 7. t. 6. f. 1

The specimen figured is from Ceylon, where it has just been detected by Mr. Thwaites

Hab. Ceylon (Bogawantalawa, Central Provinces, 5,000 feet elev. on trees), Java.

PLATE No. CLXXII.



Polypodium lasiosorum.
Hook.

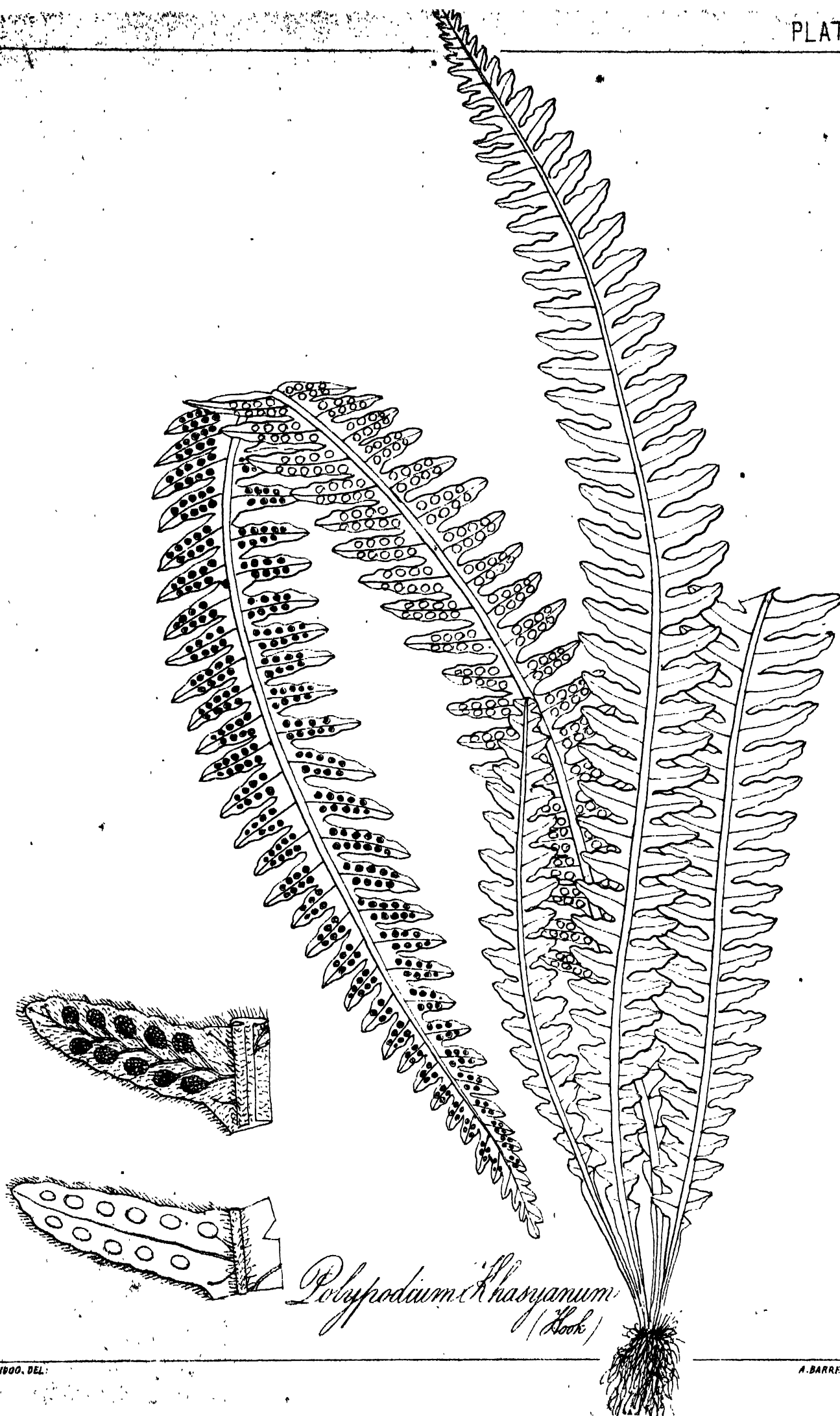
POLYPODIUM.

POLYPODIUM KHASYANUM. (Hook.) Caudex short creeping scaly, stipites short tufted (articulated upon the caudex) fronds a span to 14 inches long 1-1½ inch broad subcoriaceous-membranaceous hairy below and on the costa deeply nearly to the rachis pinnatifid with very acute sinuses, segments approximate horizontally patent from a broad and subdecurrent base oblong obtuse or the lower ones subtriangular or short and rounded entire or subsinuate ciliated, costules flexuose, and simple oblique veins apparent, sori short-oval eight or ten on each segment in 2 rows nearer the margin than the costa sunk into an oval cavity (having an elevation on the upper side of the frond) bordered by a raised margin. *Hook. Sp. Fil.* iv. 191. *Ic. Pl.* t. 949. *Cent. of Ferns*, t. 49. *Mett. Polyp.* p. 60.

The figure is taken from Sir W. Hooker's *Cent. of Ferns*.

Hab. Khasya Hills, 4,000 feet elevation,—Assam.

PLATE No. CLXXIII.



Polypodium khasyanum
(Hook.)

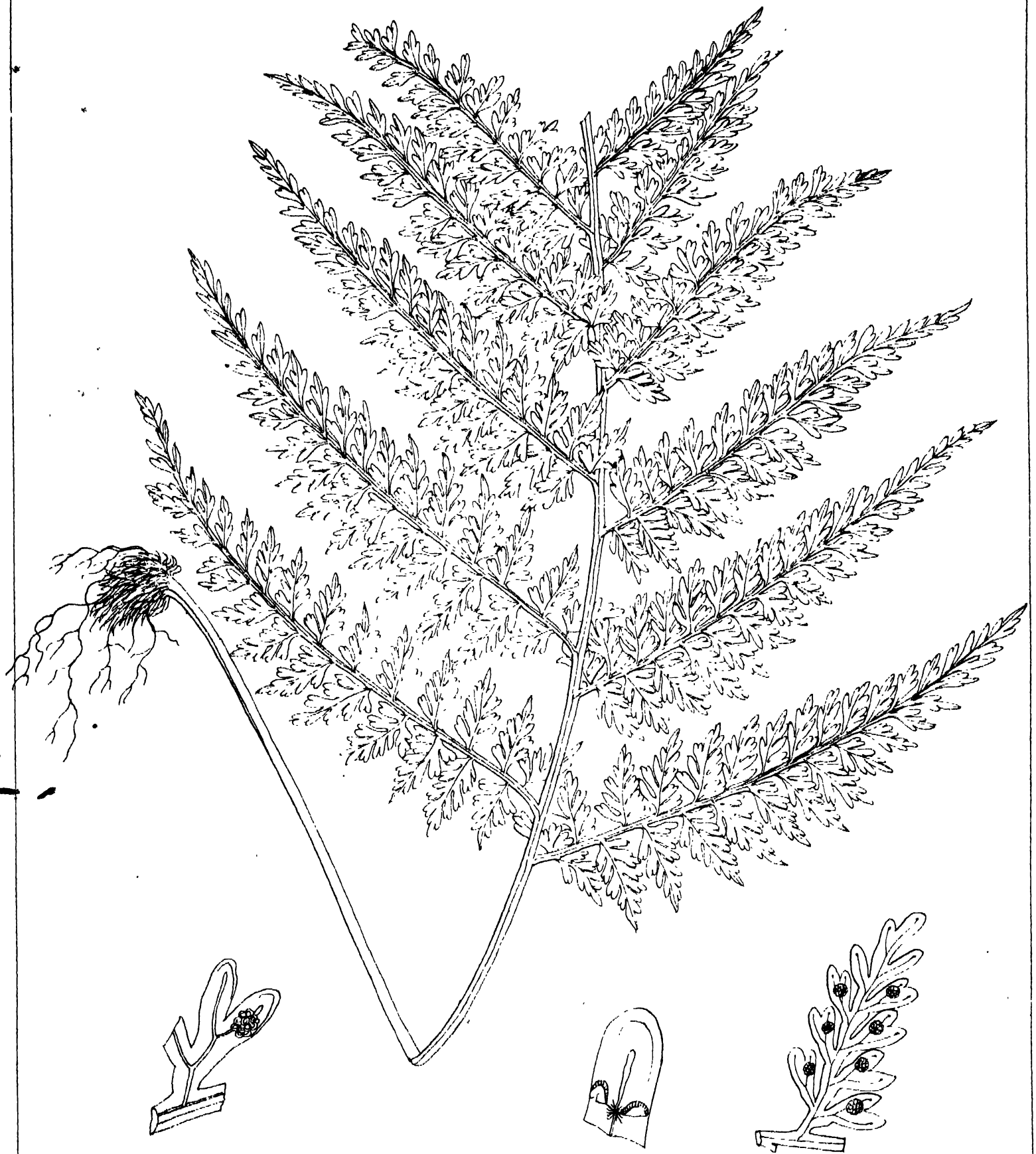
POLYPODIUM.

POLYPODIUM DAREÆFORME. (Hook.) Caudex thickish creeping densely ferrugineo-paleaceous with lanceolate much acuminate scales, stipes 4 inches long glossy pale-chestnut colored, frond a span long ovato-deltoid submembranaceous bipinnate, primary pinnae 4-5 inches long $1\frac{1}{2}$ inch wide, oblong-lanceolate subsessile acuminate subpinnatifid, segments linear or subspathulate obtuse simple or bifid, veinlets solitary in each segment clavate terminating below the apex bearing a sorus generally much below the clavate apex, capsules very few in each sorus. *Hook. Sp. Fil.* iv. 256. *2nd Cent. of Ferns*, t. 24.

The figure is taken from the 2nd Cent. (of Ferns.)

Hab. Khasya Hills, Birmah, (Parish in lit.)

PLATE No. CLXXIV.



Polypodium darexforme
(Hook.)

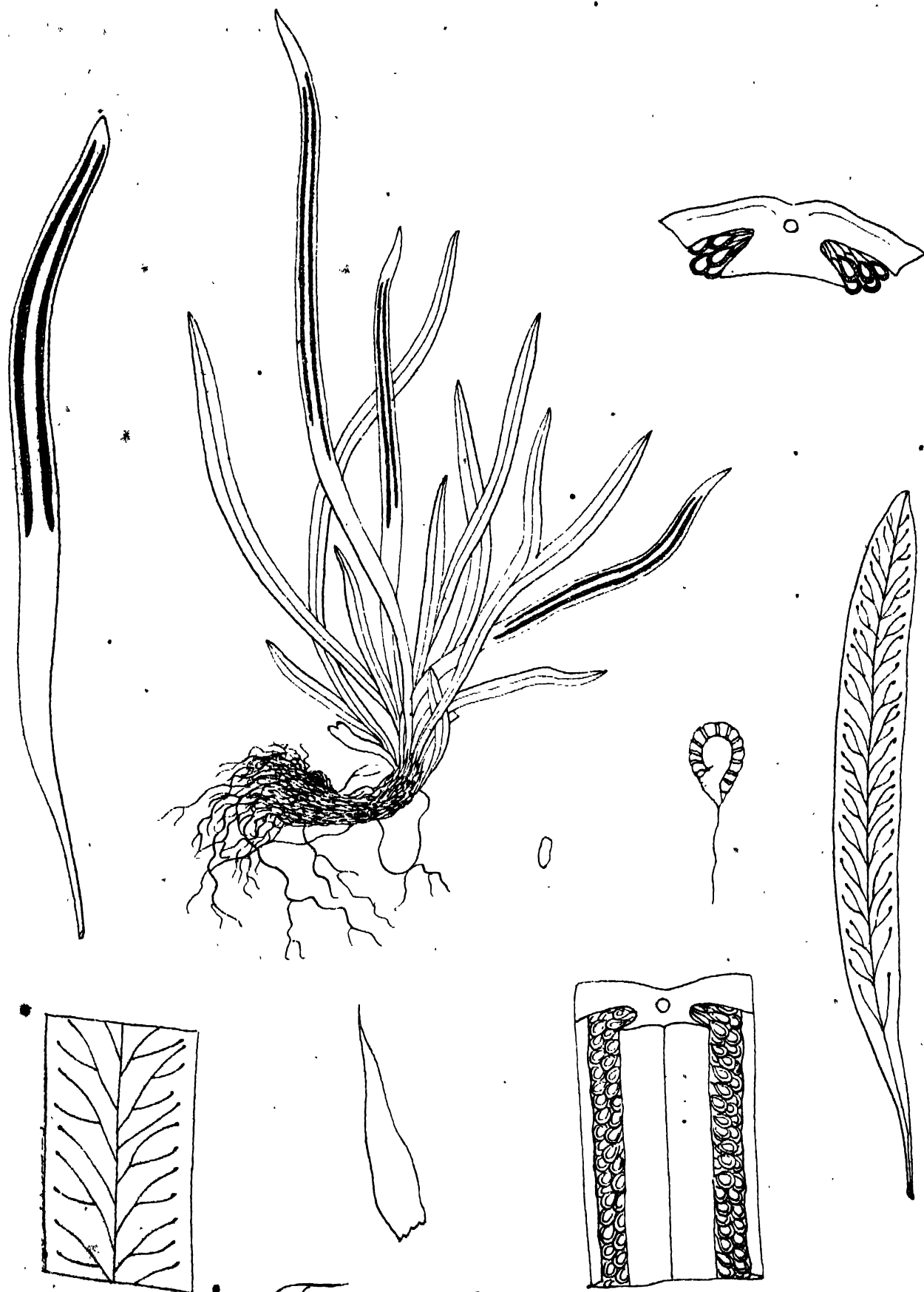
TÆNIOPSIS. (See "Ferns of Southern India," p. 18.)

TÆNIOPSIS FALCATA. (Kze ?) Caudex erect, fibrillose, furnished with lanceolate smooth brown scales at the apex, fronds rigid very thick 1 to 6 inches long $1\frac{1}{2}$ -3 lines broad narrow linear acute, sometimes forked, glabrous or sometimes furnished on the upper side only with a few distant white hairs, costa canaliculate on the upper side of the frond, not visible on the underside; veins (only visible in very young fronds when well soaked) simple, or once, (or very rarely twice) forked not extending to the margin, sori in a deep gaping sulcus somewhat distant from the margin. *Vittaria falcata*. Fée. *Vittar*, p. 20. t. 4. f. 1. Vide Thw : En : p. 438.

The specimen figured is from Ceylon, where it has just been discovered by Mr. Thwaites.

Hab. Ceylon (Central Provinces, elevation 4,000, 5000 feet) c. P. 3,807,—Java, Mount Ophir, Malacca.

PLATE No. CLXXV.



Tæniopsis falcata. (Lze)

ANTROPHYUM. (See "Ferns of Southern India," p 17.)

ANTROPHYUM LATIFOLIUM. (Bl.) Stipites 3-6 inches long compressed 2 lines wide, fronds subcarnoso-coriaceous 3-7 inches long 3 5 inches wide ovato subrhomboidal or obovate suddenly and sharply acuminate and sometimes subincisobate below the acumen, the base cuneate and rather suddenly attenuated into the stipes, costa none, venation manifest, areoles very large oblongo hexagonal subflabellately directed, most elongated in the disk, sori chiefly occupying the disk, very superficial elongated simple or branched rarely reticulated. *Hook Sp Fil.* v. 172. *Bl En. Fil Jav* p. 75, *en note*;—A. Boryanum;—*Bl. Fil. Jav.* p. 75 *t. 31. excl Syns.*, —*Hemionitis Blumeana*,—*Pr. Tent. Pter.* p. 221.

The specimen figured is from the Khasya Hills.

Hab. Java, Khasya lower ranges, Mountains North of Assam

PLATE No. CLXXVI.



Antrophyum latifolium
(Bl.)

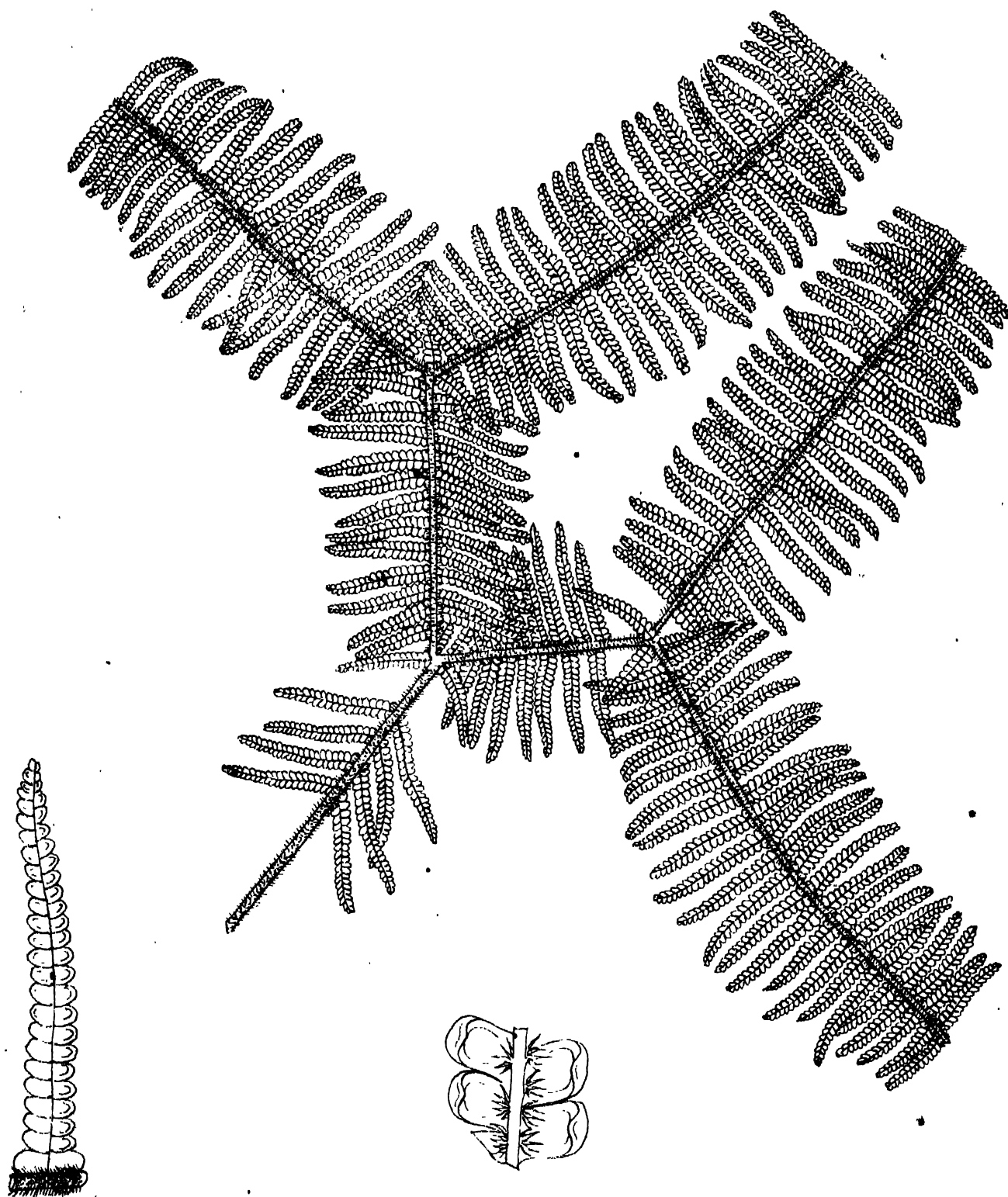
GLEICHENIA. (See " Ferns of Southern India," p. 25.)

GLEICHENIA SEMIVESTITA. (Labill.) Fronds dichotomous divaricated, branches pectinate, pinnae pinnatifid, segments orbicular ovate slightly concave, branches densely ferrugineo-pubescent, rachis with few stellated hairs, capsules 3-4 exserted. *Labill. Sert Nov. Caled. p. 8. t. 11. Hook Sp Fil 1. p. 3.*

The figure is taken from Sir W Hooker's Sp Fil.

Hab Malacca, New Caledonia

PLATE No. CLXXVII



Gleichenia semivestita
(Labill.)

DAVALLIA (See ' Ferns of Southern India,' p. 5)

DAVALLIA TRICHOMANOIDES (Bl) Caudex creeping, furnished with narrow linear long pointed golden scales, fronds
 * subtriplicate pinnate membranaceous glabrous pinnæ sub rhombic ovate rather remote, pinnules trapezoid oblong deeply pinnatifid,
 segments narrow cuneato linear obtuse subbid, fertile ones truncato emarginate at the apex with a solitary sorus segments oblong-
 truncate, rachis margined above and as well as the subtrigonal stipes glabrous *Bl En. Fil. Jav. p. 238*, —Hook Sp. Fil. 1 186

The specimen figured is from Ceylon, where it has just been detected by Mr Thwaites (c P 3903.)

Hab. Ceylon, (Adam's Peak on the Saffragam side, elevation 5,000 feet), Mountains of Java , the Moluccas

PLATE No. CLXXVIII



Davallia trichomanoides.
(Bl.)

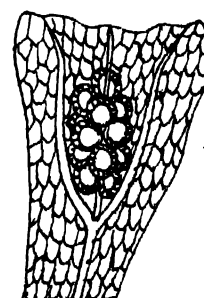
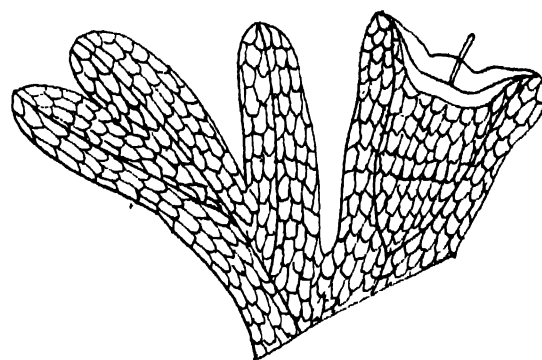
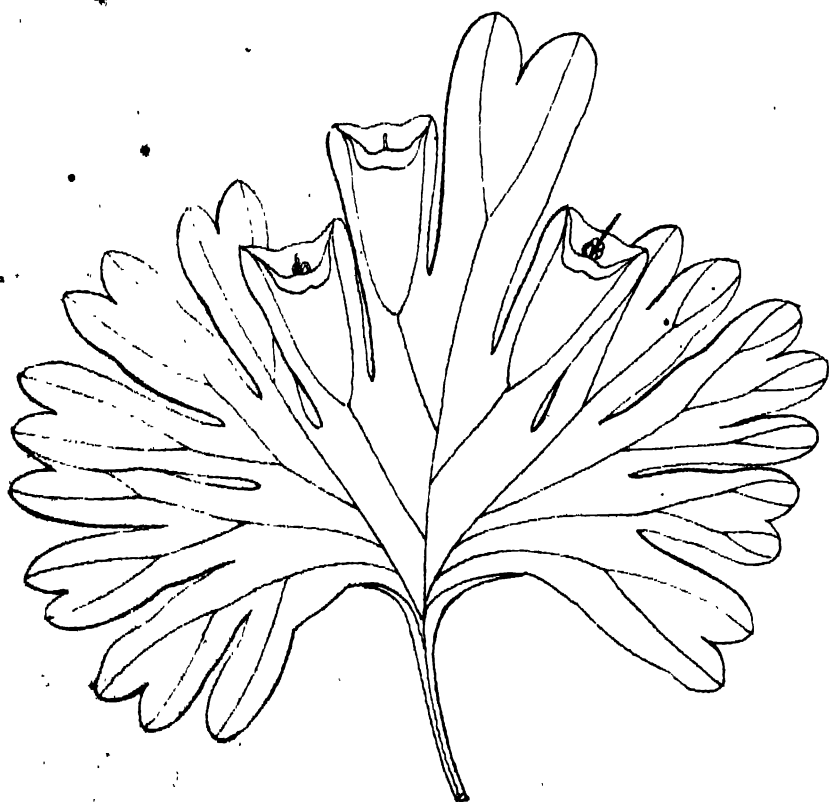
TRICHOMANES. (See "Ferns of Southern India," p. 2.)

TRICHOMANES PARVULUM. (Poir.) Caudex creeping densely matted tomentose, fronds reniform or rotundato-cuneate stipitate inciso-palmate glabrous, segments linear obtuse emarginate or bifid, involucre terminal sunk subturbinate, the mouth spreading obscurely two lipped, receptacles slightly exserted. *Hook. Sp. Fil.* 1. 118 ;—*Poir. encycl. Bot.* viii. p. 44 *Bl. En. Fil. Jac.* p. 223 ;—*T. Sibthorpioides*, *Bory. in Willd. Sp. Pl.* v. p. 498.

The specimen figured is from Coonoor (Nilgiri Hills), where it was first detected by the Rev. T. Whitehouse.

Hab. Bourbon, Java, Philippine Islands, Moluccas, New Ireland, Madagascar, Nilgiri Hills (South India)

PLATE No. CLXXIX.



Trichomanes parvulum.
(Poir.)

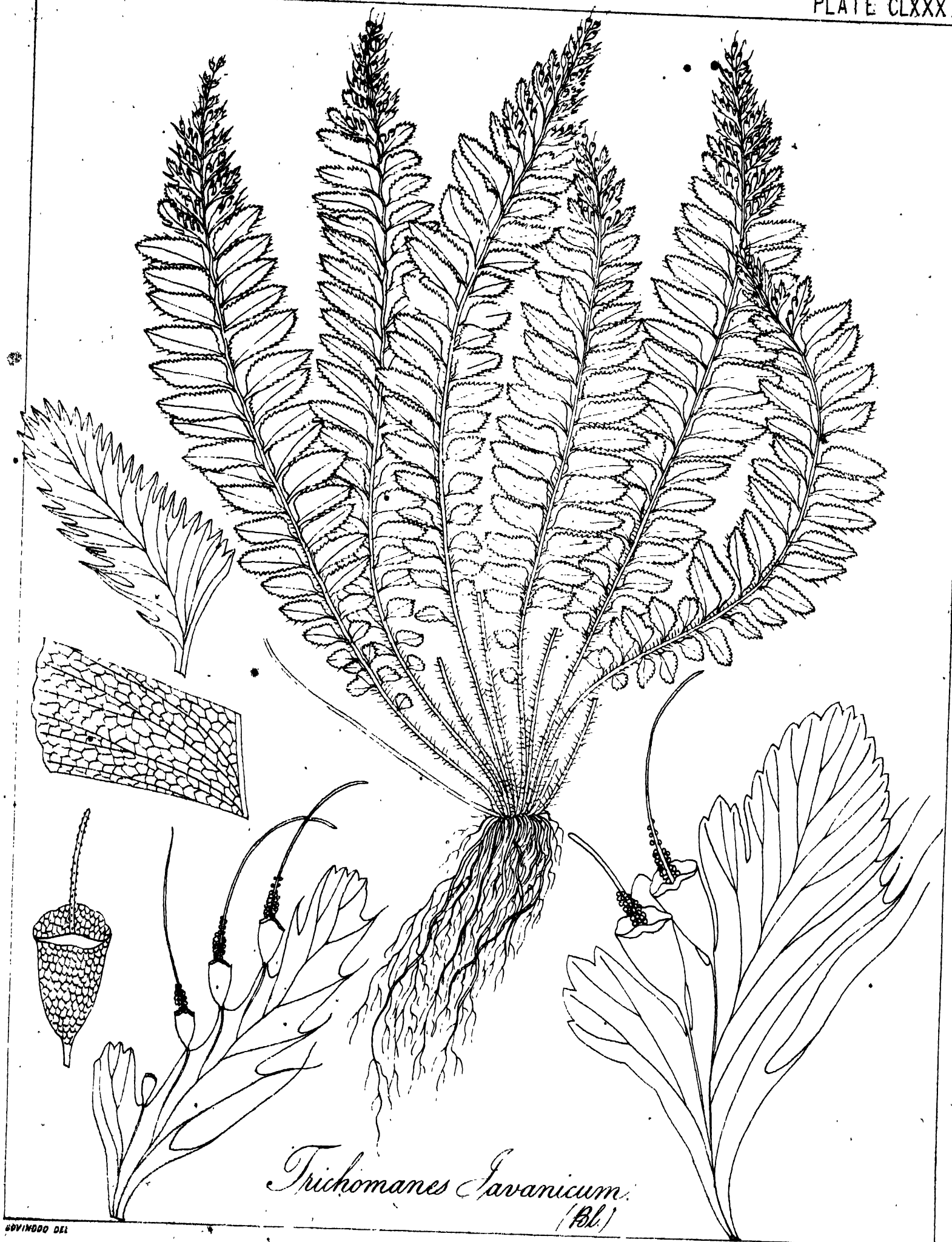
TRICHOMANES.

TRICHOMANES JAVANICUM. (Bl.) Roots long, coarse-descending wiry fibres, stipes and rachis setose, fronds tufted glaucous rigid (black when dry) pinnated, pinnæ gradually smaller towards the base and apex (the upper ones fertile) sessile or sub-petiolate, oblong, obliquely cuneate at the base, obtuse at the apex, serrate or crenate, with some of the serratures on the lower margin long and bristle-like (formed by excurrent veins) veins generally terminating within the margin but often touching the margin, and excurrent, involucre urceolate, with the mouth entire 2 to 4 on the upper margin of the superior pinnæ which are gradually more and more contracted towards the apex of the frond receptacles very much exserted. *Bl. En. Fil. Jav. p. 224. Hook. Sp. Fil. 1.130*;—*T. rigidum. Wall. Cat. n. 161 not Sw.*;—*T. setigerum. Wall. Cat. n. 158*;—*T. rhomboideum. J. Sm. En. Fil. Philipp.*;—*T. curvatum. J. Sm; l. c.*;—*T. alatum Bory in Duperrey Voy. Bot. p. 282. t. 38. f. 2. not Sw.*

The specimen figured is from Birmah (Parish)

Hab. Birmah, Chittagong (Dr. Anderson), Java, Singapore, Penang, Malay Islands, Phillippines, Ouslan.

PLATE No. CLXXX.



Trichomanes Javanicum.
(Bl.)

TRICHOMANES.

TRICHOMANES RADICANS (Sw.) Caudex very long more or less tomentose; fronds ovate or oblong acuminate erect rather firm membranaceous bi-tri-quadrupinnatifid dark green and opaque (when dry) primary divisions ovate or lanceolate cuneate at the base, the segments linear-oblong rather short obtuse emarginate or bifid, involucre supra-axillary cylindrical tapering below sunk in the more or less narrow short segments and hence more or less winged at the sides, the mouth scarcely spreading imperfectly or shortly 2-lipped sometimes wider than the tube, receptacles (when perfect) filiform many times longer than the tube, stipes short or long tereti-compressed winged nearly to the base sometimes broadly so. *Hook. Sp. Fil.* i. 125;—*Sw. Fl. Ind. Occ.*, p. 1736;—*T*: anceps. *Wall. cat. n.* 166 (not *Hook*);—*T*: umbrosum. *Wall cat. n.* 165;—*T*: scandens *Hedw. Fil. cum. Je.*;—*T*: diaphanum. *H. B. K. Nov. Gen. Am.* 1. p. 25;—*T*: ambiguum. *Sieb. Syn. Fil. n.* 143;—*T*: speciosum. *Willd. Sp. Pl.* v. p. 514;—*T*. pyxidiferum. *Huds. Fil. Angl. p.* 461. (not *Linn.*)—*T*: brevisetum. *Br : in. Hort. Kew. ed. 2. 5. p.* 529;—*T*: alatum. *Hook. in. Fl. Lond. n. ser. iv. t. 53* (not *Sw.*);—*T*. Europæum. *Sm. in Rees' Cycl*;—*T*: Hibericum. *Spr.*;—*Hymenophyllum rupestre. Raddi. Fil. Bras. p.* 67 t. 80;—*H. alatum, Sm. in. E. Bot. t.* 1417;—*H. Tunbridgens. B. Sm. Fl. Brit. p.* 1142;—*Didymoglossum alatum Desv.*

The Specimen figured is from the Khasya Hills; but is not in fructification.

Hab. Nepal Mountains, Khasya Hills, Europe, Brazil, Martinique, Mexico, Vera Cruz, Xalapa, Tabasco, Esmeraldas, Sandwich Islands, Owhyhee, Oahu, Madeira, Azores, Teneriffe.

PLATE No. CLXXXI.



Trichomanes radicans
(Sw)

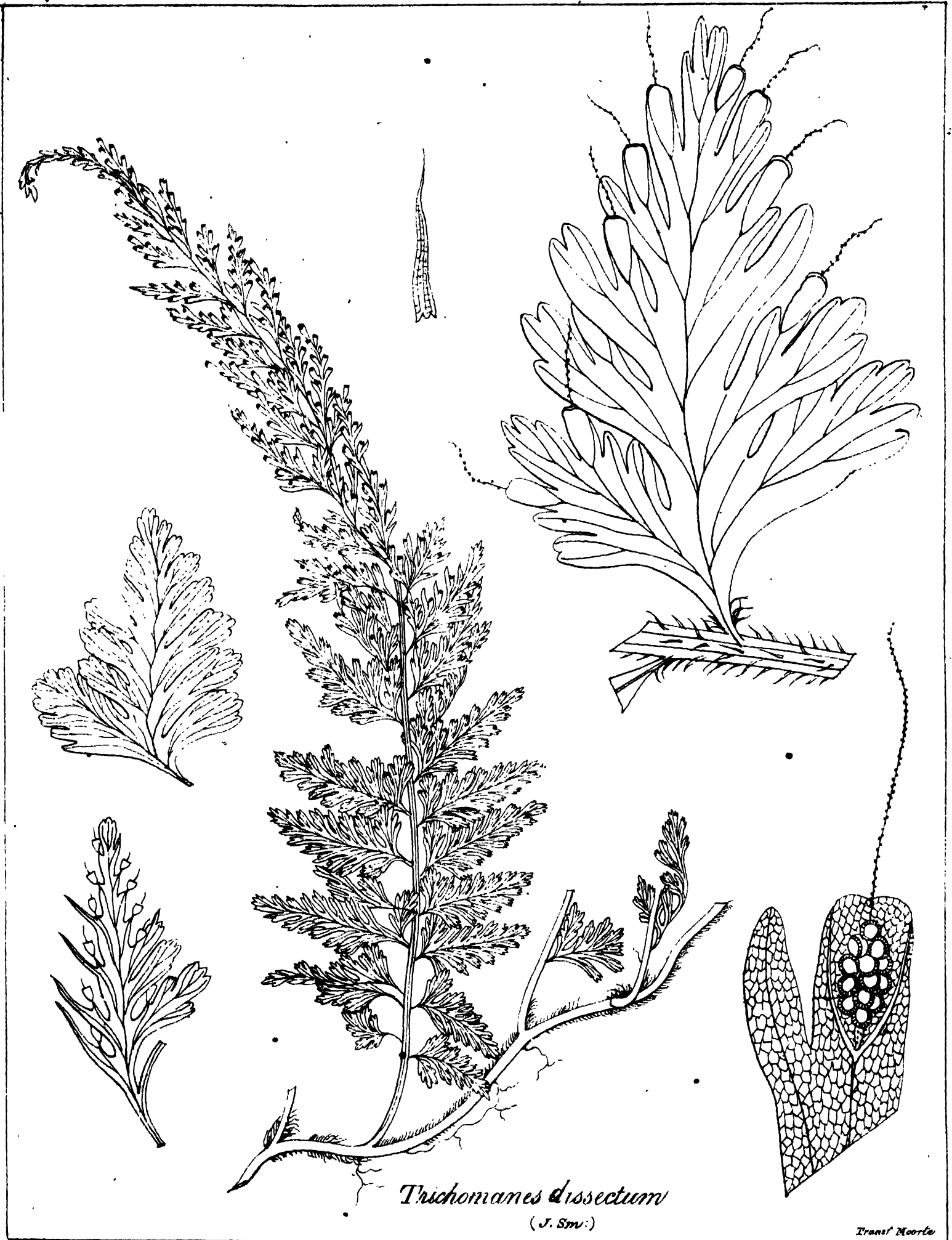
TRICHOMANES.

TRICHOMANES DISSECTUM. (J. Sm.) Caudex long creeping stout setose, fronds erect rigid black when dry scarcely stipulate lanceolate pinnate, pinnae petiolate semi-ovato-lanceolate obliquely cuneate at the base inciso-pinnatifid segments variously toothed, unequal, oblong or linear, fertile ones often much contracted, involucres terminal on the segments or supra-axillary, urceolato-cylindrical, copious, receptacle exerted very long. *Hook. Sp. Fil.* 1. p. 140 ; *J. Sm. En. Fil. Philipp.*

The Specimen figured is from the Khasya Hills.

Hab. Khasya Hills, Luzon.

PLATE No. CLXXXII.



Trichomanes dissectum
(J. Sm.)

Transl. Moore

G. G. G. Del.

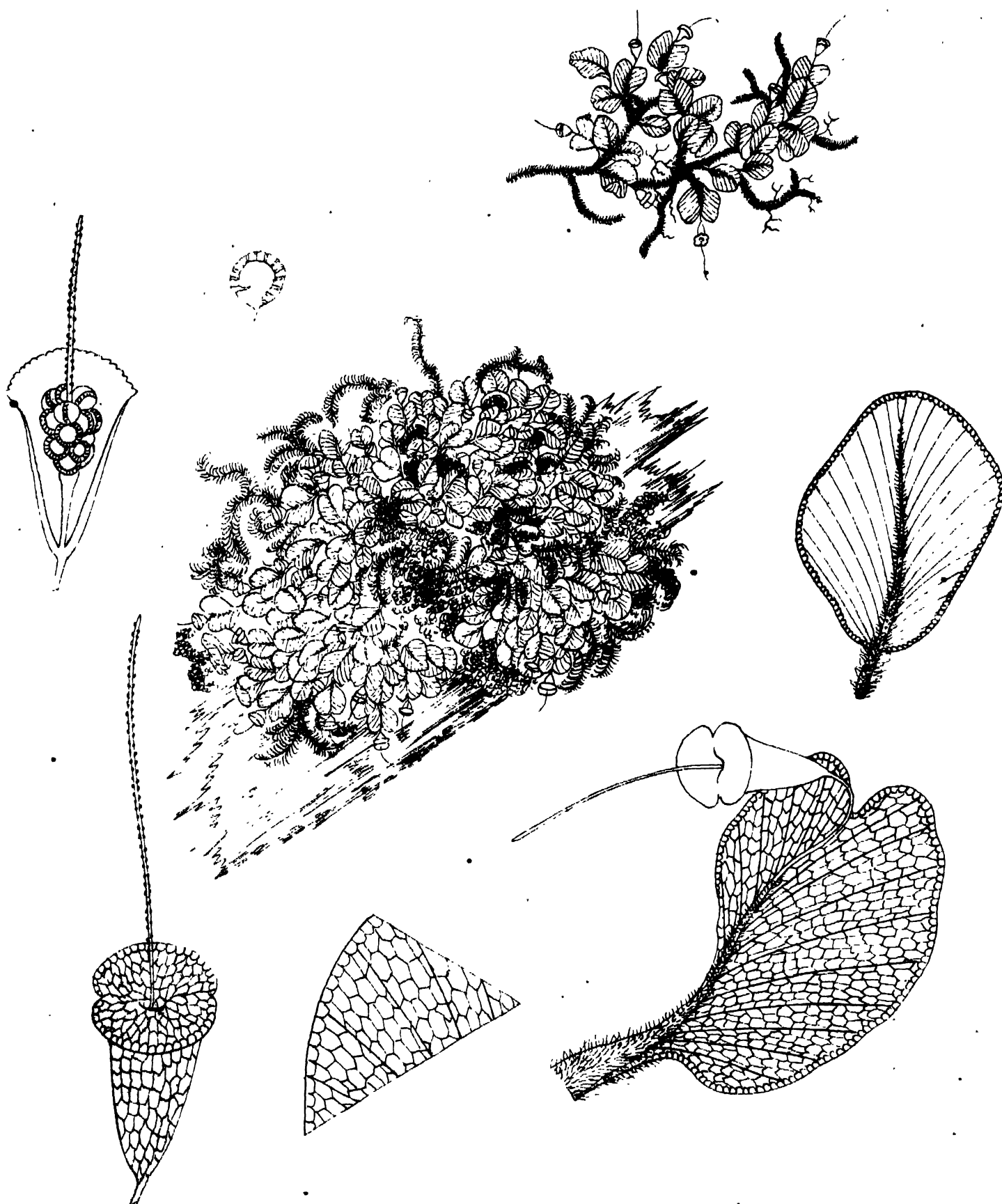
Lith. C. V.

TRICHOMANES.

TRICHOMANES HENZAIENSE. (Hook.) Caudex creeping more or less tomentose, fronds small very various in shape linear to orbicular and often lobed, membranaceous glabrous, stipes hairy very short or often obsolete, fertile fronds deeply emarginate with a long stalked involucre proceeding from the base of the sinus, the lips of its mouth very large and spreading, veins pinnate, and a very distinct marginal band of reticulations round the edge of the frond.

The Specimen figured is from Burmah (Parish). Mr. Parish forwards specimens of what he considers to be 2 or 3 different varieties of this species, they are very unlike the form here figured, having flabellate and in some cases deeply pinnatifid fronds and some have the involucre quite sunk in the frond, if Mr. Parish is correct in his supposition the species is most protean, and *T. Henzaiense*. *T. Neilgherriense* (Bedd.) and some others are probably only varieties of *T. muscoides*, Sw.

PLATE No. CLXXXIII.



Trichomanes Harveyiense
(Hook.)

MENISCIUM. (See "Ferns of Southern India," p. 19.)

MENISCIUM PARISHII. (Bedd.) Caudex thick creeping furnished with numerous thick wiry roots, stipes 1 foot long, fronds deltoid-ovate 10-12 inches long 8-10 inches broad at the base, coriaceous-membranaceous pinnate, pinnæ about 4 pair with an odd one, sub-opposite sessile or very shortly petiolate, linear-lanceolate, sinuate at the margin, long and finely acuminate, 3-5 inches long $\frac{1}{2}$ to nearly one inch broad, glabrous above, slightly pubescent (or often at length glabrous) on the costa and costules beneath, terminal pinnæ 7-8 in. long 2 in. broad often auricled at the base, veinlets 5-7 pair (in the terminal pinnæ 8-10) all joined or the superior 1-2 pair free intermediate venule free and clavate in the lower areoles, generally joined above and forming a continuous line, sori occupying nearly the whole length of the arched veinlets.

The specimen figured is from Burmah (Parish.)

PLATE No. CLXXXIV.

Order. MARATTIACEÆ.

(2) *Sori circular distinct ; spore cases concrete in a single annular series.*—KAULFUSSINEÆ.

KAULFUSSIA. *Blume Enum, Fil. Jav.* 260.

(*Macrostoma Hooker M. S. Aspidii Sp. auct.*)

Gen. char. *Sori* dorsal, non-indusiate, sessile, globose, fleshy-coriaceous, concavo-hemispherical, crenate, consisting of 10-20 spore cases arranged in a single sessile concrete series ; the spore cases bursting on the inner face, by a vertical oblong or linear-obovate cleft or slit. *Receptacles* globose compital. *Veins* prominent pinnate ; venules anastomosing in hexagonal areoles, sori ferous on the points of confluence, the ultimate areoles containing free clavate veinlets.

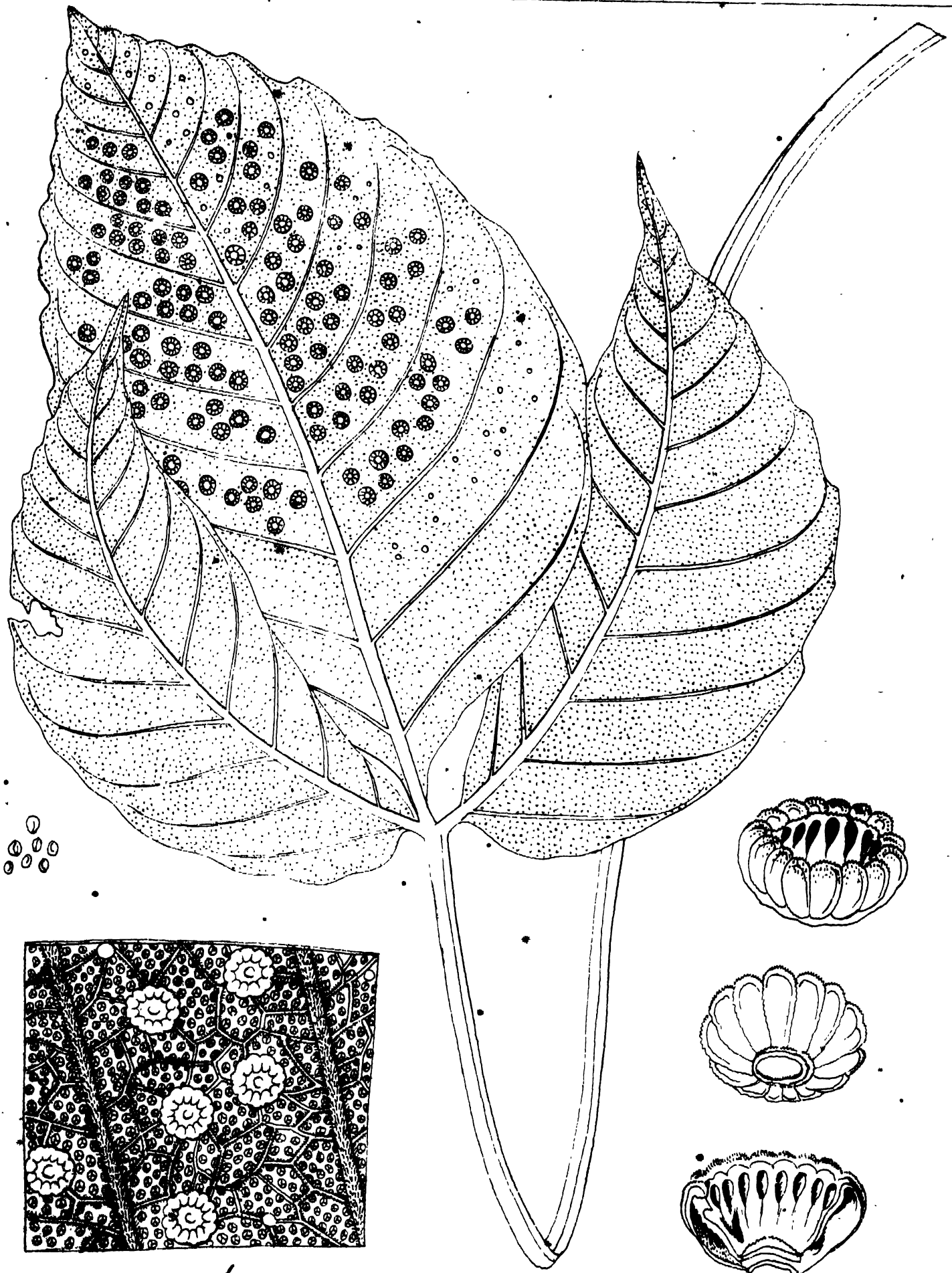
Fronds coarse ternate, the under surface furnishes copiously with cavities which are probably secretory organs. Rhizome thick ? decumbent. (Moore.)

KAULFUSSIA ASSAMICA. (Griff.) fronds 3-foliate, leaflets sessile, stipes terete, spore cases about 20, only opening on the inner face about half their length.

The figure is taken from Hooker's *journ* : of Bot. ii. 375 and shows no free veinlets in the areoles which is probably a mistake as is my specimens of *K : ocellifolia* Bl : an allied species from Java they are always present.

Hab. Upper Assam.

PLATE No. CLXXXV.



Kaulfussia Assamica
(Griff.)

TRIBE CYATHEINEÆ.

MATONIA. Br: Wall. Pl: Asiat. Rav. 1. 16. t. 16.

(Prionopteris Wallich.)

Gen. char. Sori indusiate globose, situated at the posterior base of the segments and consisting of 6-7 sessile spore cases, the receptacles compital, i. e. produced at the point of confluence of several (obscure) anastomosing venules. Indusium indistinctly 6-7 lobed umbonate-hemispherical attached by an axile petiole, round the base of which the spore cases are inserted, its lower margin much incurved so as to enclose the sori in the manner of an inverted reflexed cup. Veins forked from a central costa, anastomosing where fertile otherwise free.

Fronde fan-like conjugato-sub-pedately flabellate, the pinnae produced on the anterior or upper side of the divergent branches rigid linear pinnatifid nearly to the costa glabrous often glaucous beneath one or two feet long, 1-1½ foot wide, stipes slender 6 to 8 feet high. Rhizome creeping.

A genus consisting of a single species.

MATONIA PECTINATA R. Br. *Hook sp. Fil.* v. 285. Prionopteris Farquhariana. Wallich.

The specimen figured is from Mount Ophir.

Hab. Summit of Mount Ophir (Malacca.)

PLATE No. CLXXXVI.



Matonia pectinata
(R. Br.)

Transf. Moorea

Agnes D. Del.

Edith C. Vinciguerra Rayo.

OSMUNDINEÆ.

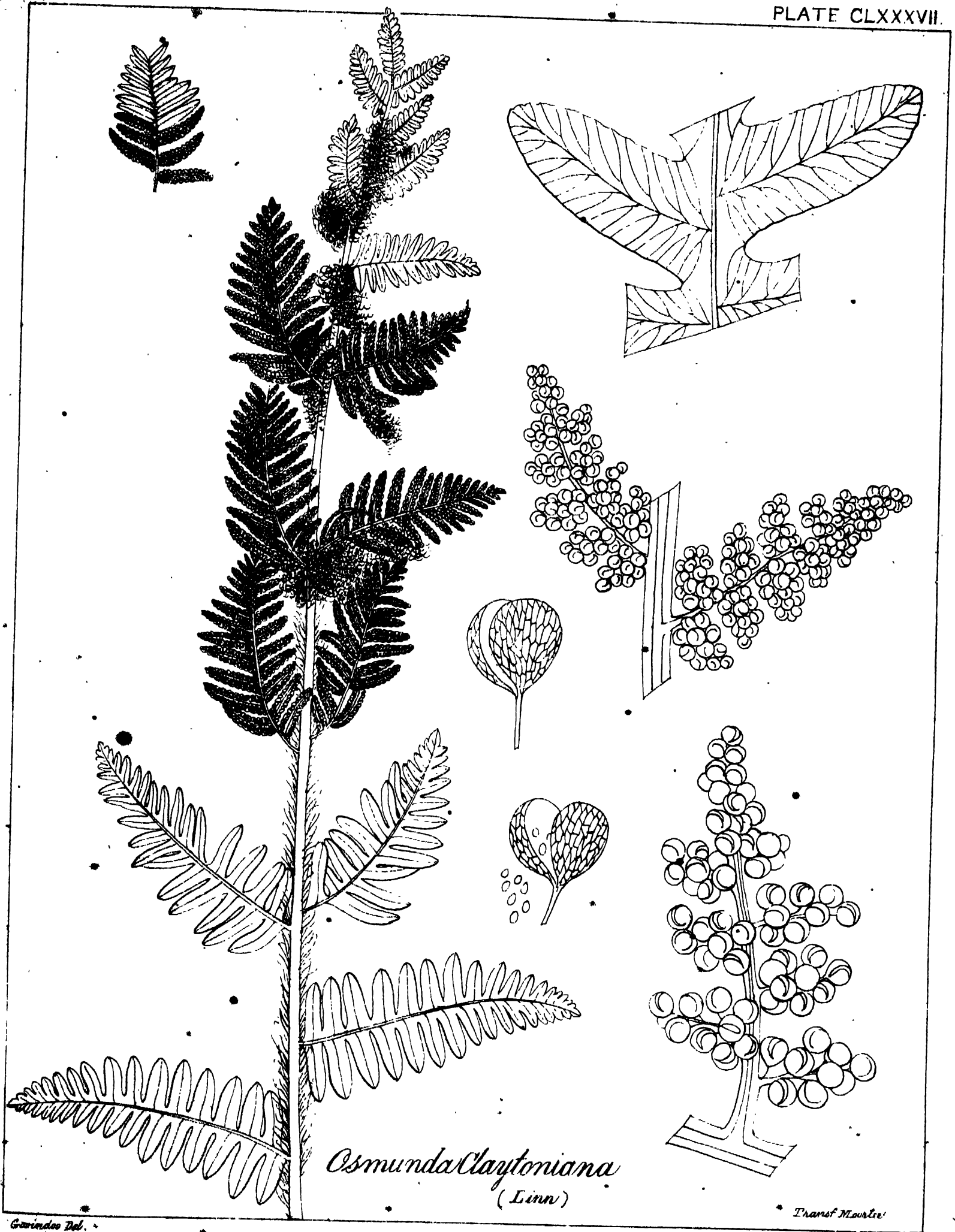
OSMUNDA. (See "Ferns of Southern India," p. 26.)

OSMUNDA CLAYTONIANA: (L.) Fronds 1-3 feet long 4-8 inches wide, pinnate, rachis furnished with wooly hair which is more or less deciduous, pinnæ alternate or opposite sessile 2-3 inches long $\frac{1}{2}$ to 1 inch broad, pinnatifid nearly to the costa segments about $\frac{1}{2}$ an inch long, very obtuse, gradually smaller toward the apex of the pinnæ; some of the central pinnæ transformed, wholly or partially sporangiferous. *Osmunda interrupta*. *Mich.*

The specimen figured is from the Khasya Hills.

Hab. The Himalayas, Khasya Hills.

PLATE No. CLXXXVII.



Osmunda Claytoniana
(Linn.)

Garland Del.

Transf. Moore

Litho. C. Venkatraman Ray

POLYPODIUM. (See "Ferns of Southern India," p. 55.)

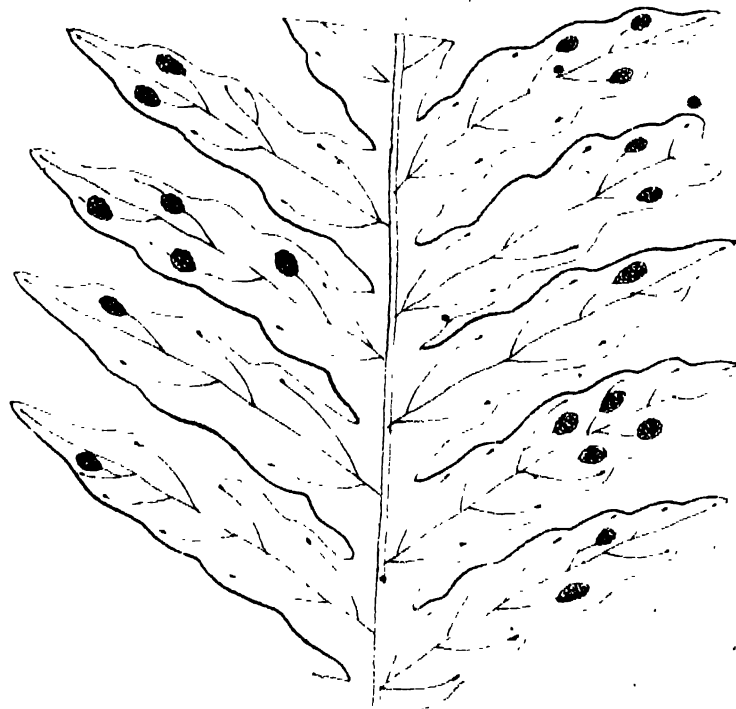
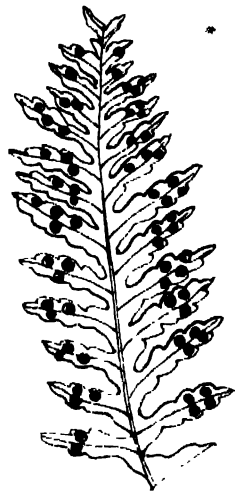
POLYPODIUM THWAITESII. (Bedd.) Caudex creeping, clothed with lanceolate scales, fronds sessile rigidly membranaceous, perfectly glabrous 2-4 inches long 1 inch wide, lanceolate deeply almost to the costa pinnatifid segments 3-6 lines long 1-2 lines broad sinuato-pinnatifid lower ones gradually smaller, veins pinnate, veinlets simple or rarely forked, where simple soriferous at the apex or a little below it, where forked the superior veinlet is soriferous.

I received this specimen from Ceylon where it has just been detected by Mr. Thwaites, who considers it the true *P. parvulum* of Bory; on comparing it however with authenticated specimens of that species from the Mauritius, I find that it wants the warty stipes of that plant, the venation is different, and the segments of the frond are generally distinctly sinuato-pinnatifid instead of entire. Mr. Thwaites informs me it is very sweet scented.

(Note.—Plate No. CLXVI of "the Ferns of Southern India," is *P. subfalcatum* Bl. but the description that of *P. parvulum*);

Hab. Ceylon, Central Provinces. (C. P. 3,900.)

PLATE No. CLXXXVIII.



Polypodium Thwaitesii
(Bedd)

POLYPODIUM.

POLYPODIUM SUBFALCATUM. (Bl.) Caudex small, obliquely erect crinite rather than paleaceous, stipites short 3-8 lines long patenti-pilose, fronds firm-membranaceous hairy on both sides, or sometimes sub-glabrous beneath, 6-8 inches long 1-1½ inch broad, oblong-lanceolate subacuminate attenuated below deeply almost to the rachis pinnatifid, segments horizontally patent from a rather broad and decurrent base, linear lanceolate acute strongly serrated or pinnatifido-serrate, or slightly sinuate only, (sub-entire), lower ones remote distinct smaller than the rest, costule slender flexuose, veins evident distant simple oblique soriferous at the apex, sori small globose. *Hook. Sp. Fil.* iv. p. 193; *Bl. Fil. Jav.* p. 186; *P. filipendulifolium*;—*Fée. Gen. Fil.* p. 240;—Variety β ;—glabrum, fronds glabrous beneath except on the costa, segments slightly sinuate or sub-entire.

The two varieties here figured have just been forwarded to me from Ceylon by Mr. Thwaites who refers them I think correctly to *P. subfalcatum* (Blume), the more hairy variety has already been figured in "the Ferns of Southern India," Plate No. CLXVI, but incorrectly named *P. parvulum* (which species has a creeping caudex). The fern figured at Plate LXXVI of this work as *P. subfalcatum*, has the veins soriferous in the middle, and is probably an undescribed species although the description accompanying the Plate refers to *P. subfalcatum*.

Hab. Ceylon, Anamallay Hills, (S. India) Java, Luzon, Nepal, Kumaon (alt. 8,500 feet) Sikkim, Himalayas.

PLATE No. CLXXXIX.

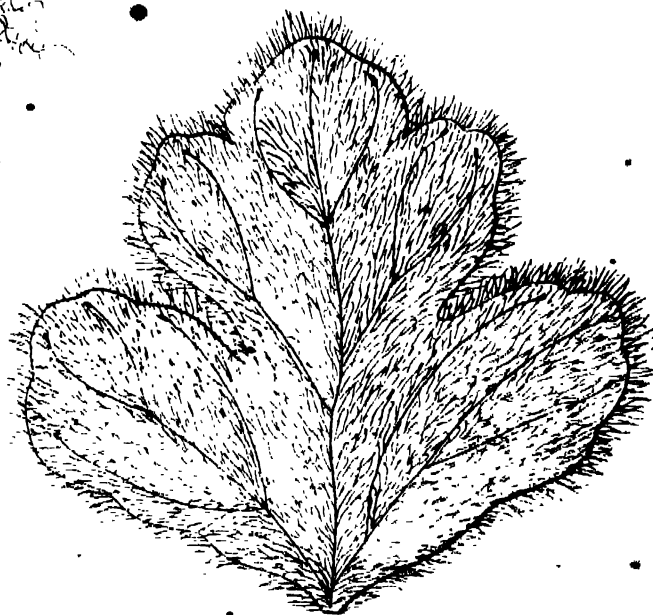
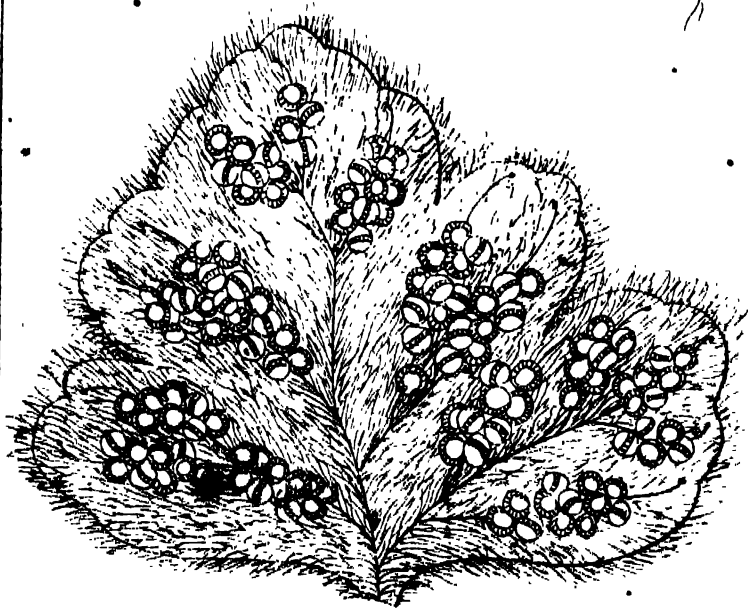
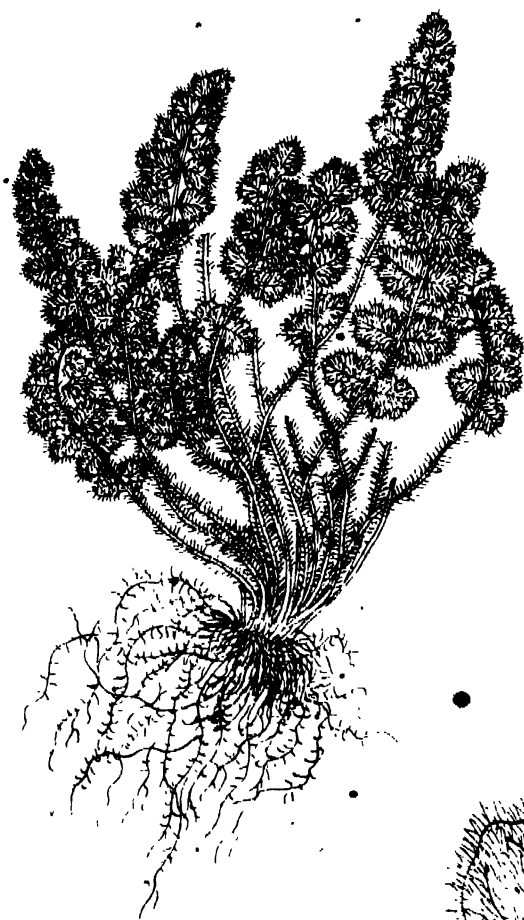
GYMNOGRAMMA, (See "Ferns of Southern India," p. 77.)

GYMNOGRAMMA ANDERSONII. (Bedd.) Caudex subrepent furnished with numerous black airy roots, stipites aggregated 1-2 inches long, shaggy with long soft golden hairs, fronds (including stipes) 1-4 inches long, $\frac{1}{2}$ an inch broad, membranaceous, pinnated copiously, strigose especially beneath with similar hairs to those on the stipes and rachis, pinnae $\frac{1}{4}$ to $\frac{1}{2}$ an inch long sessile cordato-ovate or oblongo-ovate pinnatifid or crenated, costa not very prominent veins pinnate in the lower segments of the pinnae, forked or simple in the upper ones, all free and terminating considerably within the margin, sori copious on the veins and forked.

The specimen figured is from dry rocks in the Soondadunga valley (Kumaon) elev. 13,000 ft. (Dr. Anderson.)

Hab. Kumaon (Himalaya.)

PLATE No. OXC.



Gymnogramma Andersonii
(Bedd.)

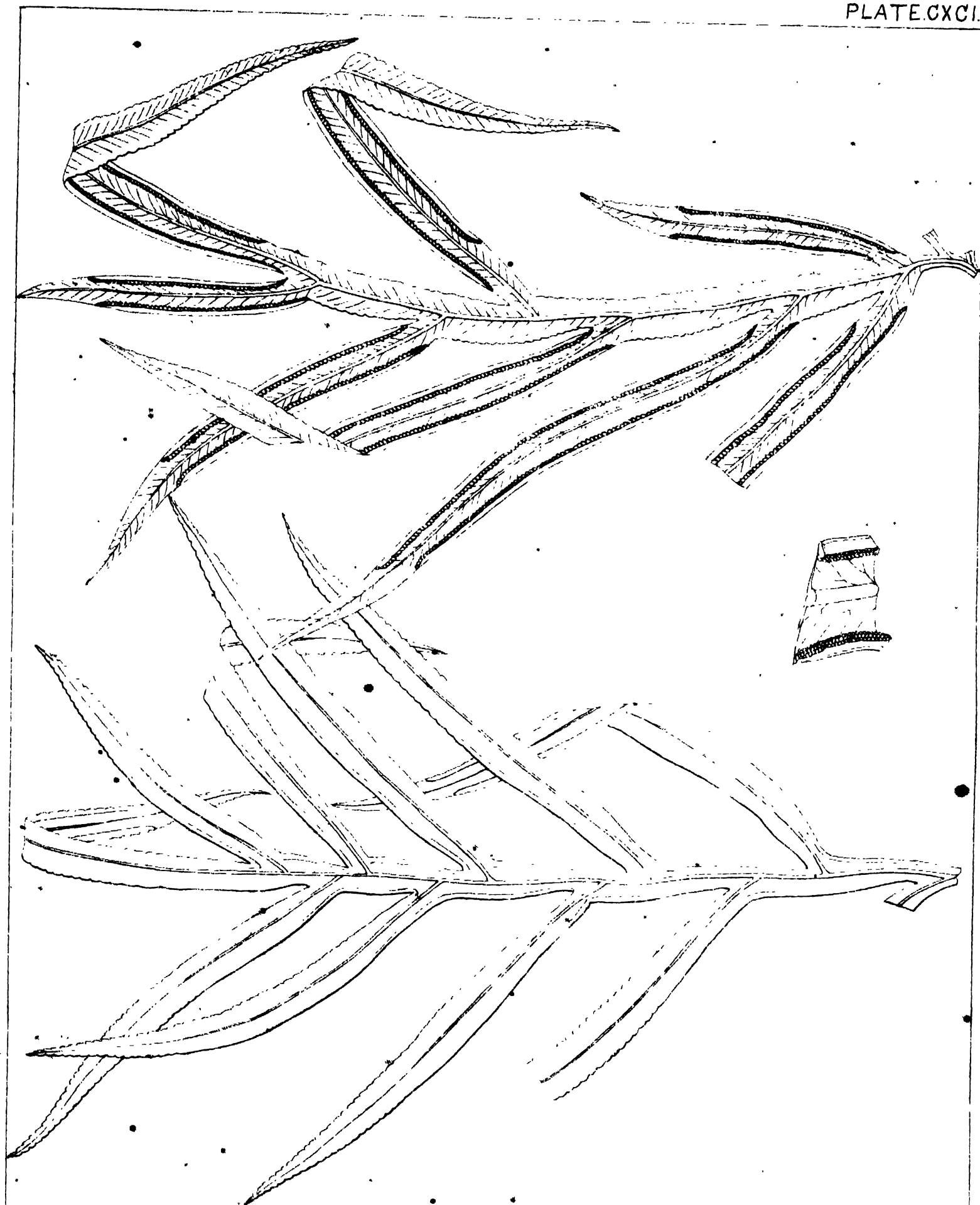
PTERIS. (See "Ferns of Southern India," p. 11.)

PTERIS DALHOUSIÆ. (Hook.) 2-3 feet and more high, frond ample 1-2 feet, subcoriaceous-membranaceous glossy bi-tri-below quadripinnate, pinnæ and pinnules all remote, superior pinnæ simple (undivided) and pinnules all linear-sublanceolate very much elongated acuminate and serrated, remarkably alato-decurrent on the rachis, lower primary pinnæ not decurrent petiolate falcate (lowest pair sometimes bipartite), the upper margin entire (rarely with one segment), the lower pinnate (or pinnatifid) with 5-6 (more or less) long pinnæ decurrent so as to form a very broad winged rachis, veinlets simple or forked, involucres subintramarginal, narrow membranaceous continuous along the rachis rarely reaching the acuminate apices, stipes very glossy and as well as the firm prominent costa bright glossy, tawny or purple-brown. *Hook. Sp. Fil.* ii. 170.

The figure is taken from Sir W. Hooker's *Sp. Fil.*

Hab. Penang, Java.

PLATE No. CXCI.



Pteris Dalhousiae
(Hook.)

Goussier Del.

Transf. Montu.

Lith. C. V. M. C. Trayado 1890.

§ 1. ACROSTICHEÆ.

(a) *fronds wholly fertile.** *Veins free.*LOMARIOPSIS. *Fée. Hist. Acrost.* 10.

(*Acrostichi* Sp. *Auct.* ; *Lomariæ* Sp. *Auct.* ; *Stenochlænæ* Sp. *J. Sm.* ; *Olfersiæ* Sp. *Presl.* ; *Onocleæ* Sp. *Auct.* ; *Anemiæ* Sp. *Sprengel* ; *Osmundæ* Sp. *Bory.*)

Gen. char. Sori superficial, non-indusiate, the *receptacles* occupying the under surface of the contracted fertile fronds. *Veins* simple or parallelo-furcate from a central costa. *Venules* free.

Fronds dimorphous, pinnate, the fertile contracted. Rhizome scandent. This genus differs from *Stenochlæna*, with which it agrees in habit, in the absence of the costal areole, and of the gland on the margin of the pinnæ near the base. (Moore)

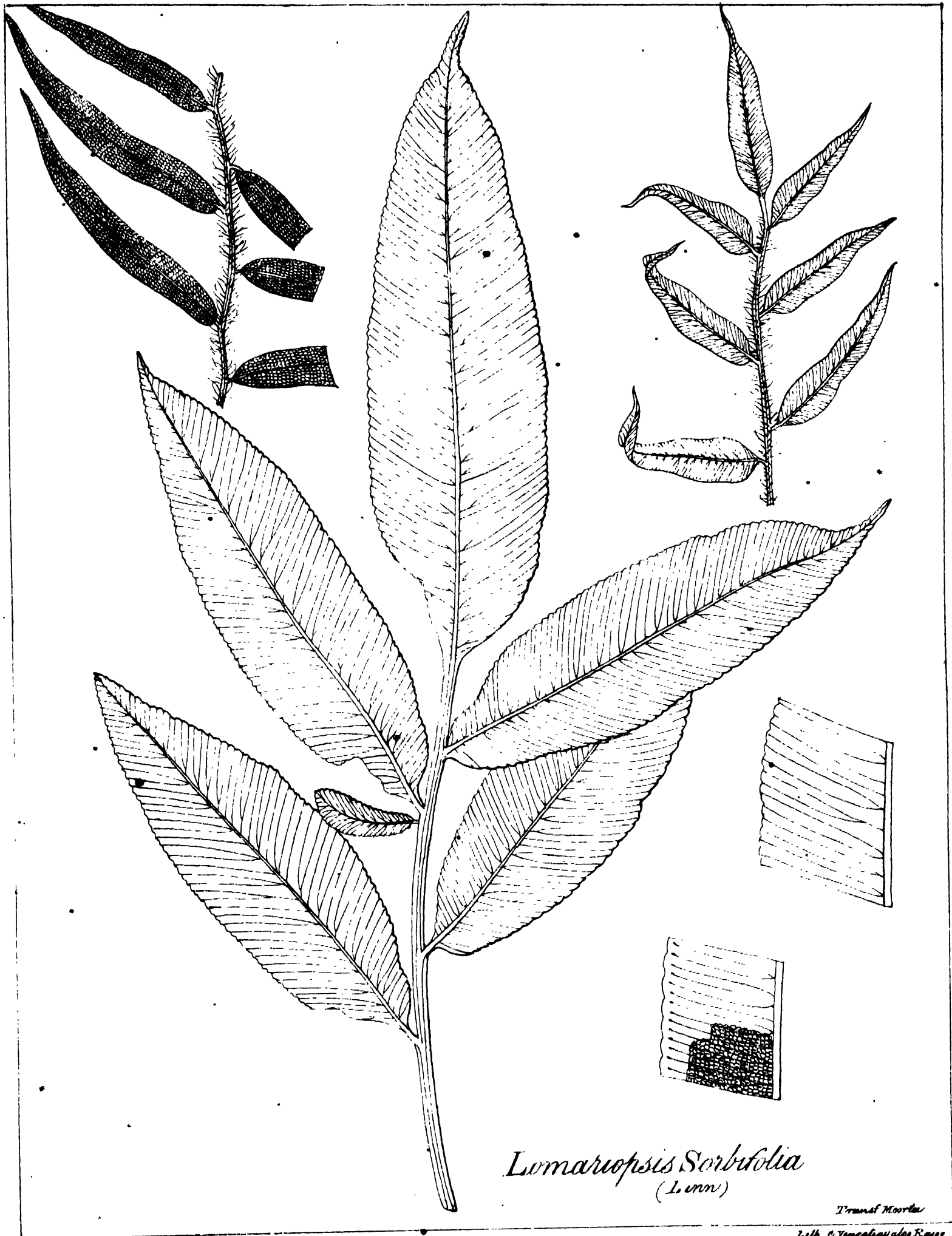
LOMARIOPSIS SORBIFOLIA (Linn.) Caudex long thick scandent often angled by the decurrent bases of the stipites clothed large lanceolato-subulate ciliated generally pale fuscous scales, stipites varying in length 3 inches to a foot long more sparingly paleaceous, fronds subcoriaceous 1-2 feet long lanceolate or oblong pinnated, pinnæ articulated 6-80 ; sterile pinnæ from 4-7 inches long and from $\frac{3}{4}$ -2 inches wide lanceolate or oblong acuminate sometimes broader upwards or sometimes caudato-apiculate subpetiolate entire or more or less serrated or dentate at the margins, rachis winged towards the apex and even for its whole length in the young specimens, veins manifest extending to the margin more or less elevated ; fertile pinnæ smaller and narrower, veins terminating within the margin. *Hook. Sp. Fil.* v. 242 ; *Linn. Sp. Pl.* p. 1526 ; *Lomaria longifolia* and *sorbifolia* *Kfs.* ; *Stenochlæna longifolia* *J. Sm.* ; *Acrostichum lomarioides* *Bory in Belang. Voy.* p. 21 t. 2. (pinnules obtuse) ; *Lomariopsis Boryana* *Fée Acrost.* p. 68 ; *Lomaria integrifolia* *Klfs. in Sieb. Syn. Fil.* n. 23. *Lomariopsis cuspidata et variabilis* *Fée Acrost.* ; *Lomaria fraxinea* *Willd.* ; *Lomariopsis ludens.* *Fée Acrost.* (abnormal form) *Lomaria recurvata et leptocarpa.* *Fée Acrost.* ; *Stenochlæna oleandrifolia.* *Brack Fil. U. S. Expl. Exp.* p. 75, *Lomariopsis Cochinchinensis et Smithii* *Fée Acrost.* ; *L. Wrightii* *Mett.—Acrost.* *Yapurense* *Mart. Ic. Pl. Crypt. Bras.* p. 36. *Hook. Gard. Ferns* t. 57, et *phlebodes* *Kze on Linnæa* ix. p. 33. *Lomariopsis Pricuriana et erythrodes et elongata* *Fée Acrost.*

A genus of probably only one species but with numerous synonyms.

The Specimen figured is from Singapore.

Hab. Singapore, Cochin China, Bourbon, Mauritius, Madagascar, Tropical America, West Indian Islands, Cuba, Columbia, Guiana, Peru, &c., Tropical Africa, Philippine Islands, Fiji Islands, Samoa, Luzon.

PLATE No. CXCII.



Lomariopsis Sorbifolia
(Linn.)

Thos. Moore

Lith. C. V. Venkay Rao

Coriander Del.

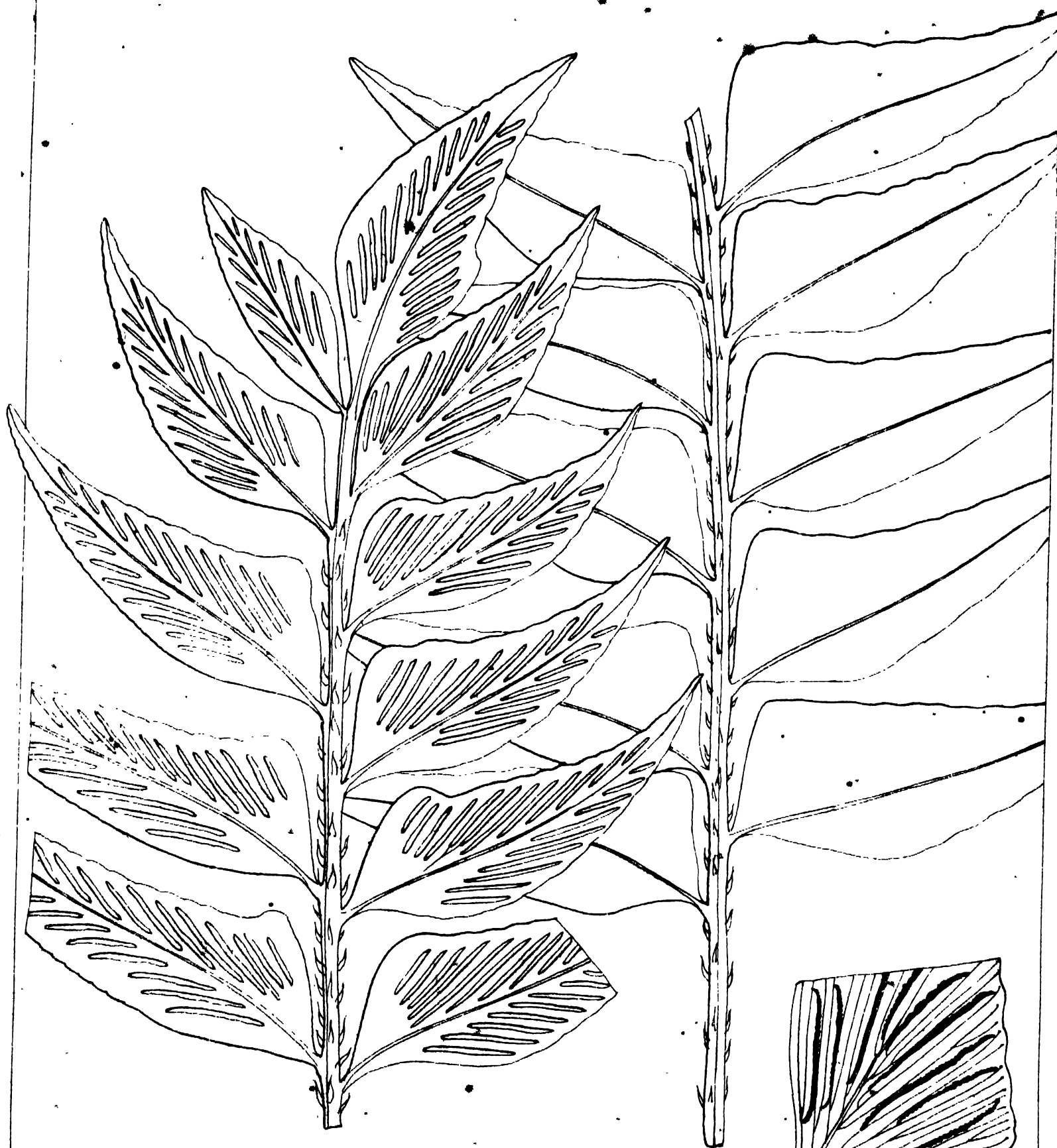
ASPLENIUM. (See "Ferns of Southern India," p. 43.)

ASPLENIUM ZAMIOIDES. (Hook.) Stipes and rachis deciduously scaly compressed and sulcated, frond a foot and more long oblong acuminate firm coriaceous-membranaceous opaque (probably very succulent when fresh) impari-pinnate, pinnae 14-17 horizontally patent dimidiato-ovate sometimes subfalcate obtuse or obtusely acuminate $2\frac{1}{2}$ -3 inches long quite entire, the base obliquely cuneate and tapering into a very short petiole, superior extended, sometimes forming an obtuse angle or imperfect auricle, terminal pinna the largest elliptical-ovate with a more or less distinct lobe on one side, veins sunk subflabellate especially near the base erecto-patent twice or more forked distant, costa indistinct sori elongated almost parallel with the obscure costa often interrupted sometimes an inch long and extending to the margin costa stout compressed, *Hook Sp. Fil.* iii. 114,

The figure is taken from Sir W. Hooker's *Sp. Fil.*

Hab. Penang.

PLATE No. CXCIH.



Asplenium Zamoides.
(Hook.)

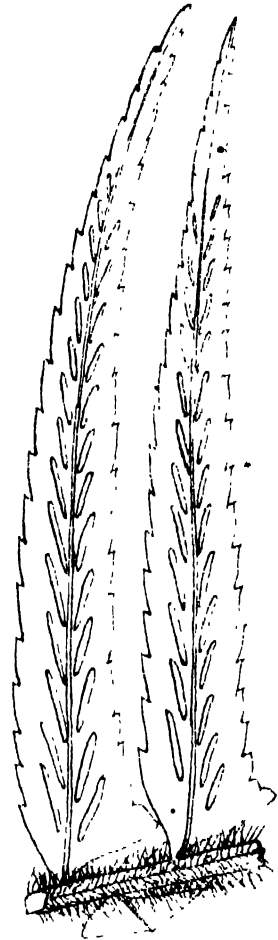
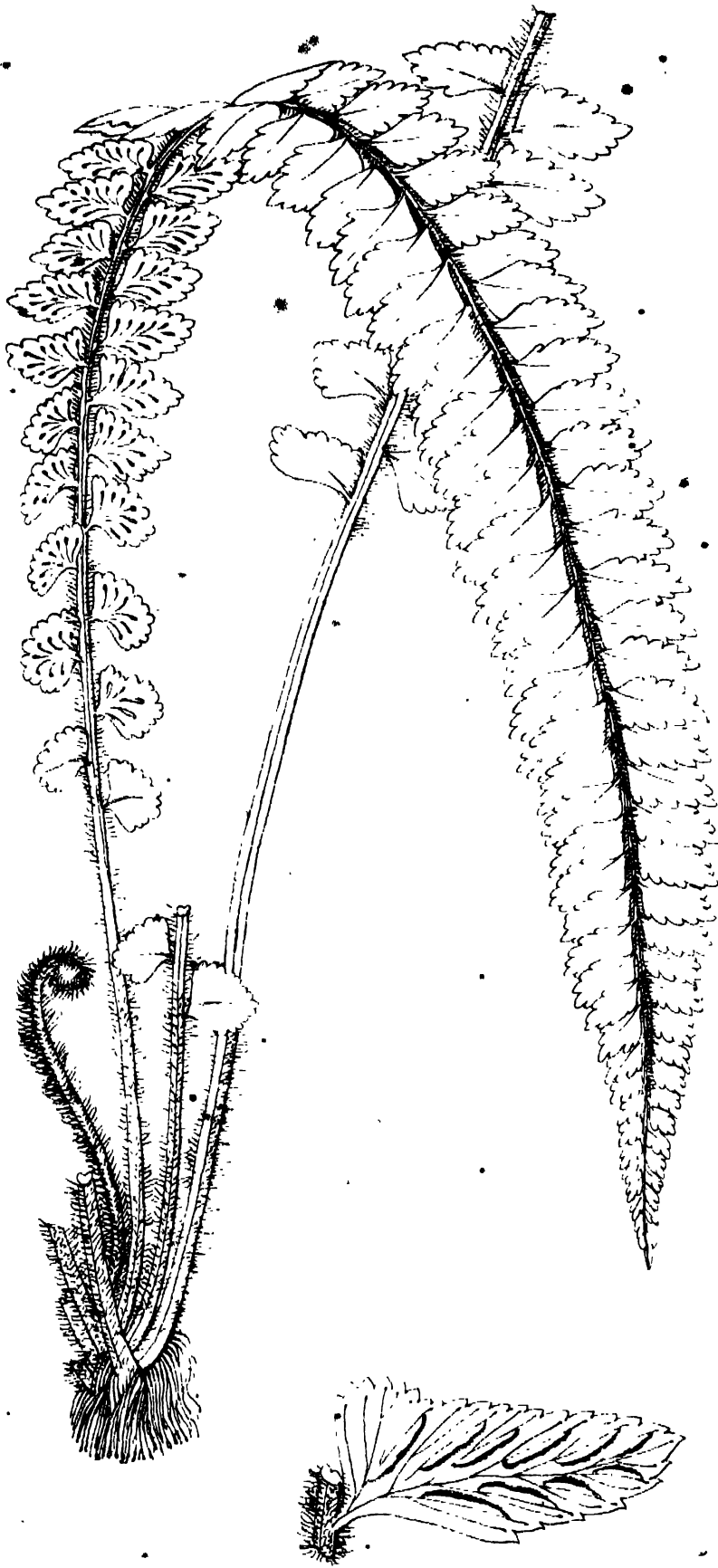
ASPLENIUM.

ASPLENIUM HIRTUM. (Klfs.) Caudex short thick woody scarcely creeping densely clothed with subulate black fringed hair-like scales which are continued on the stipes and rachis and partially on the costæ beneath where they become patent at length deciduous, stipites subcaespitose a span to a foot and more long dull lurid-blackish rather stout, fronds $1\frac{1}{2}$ to 2 and more feet long lanceolate acuminate coriaceous or stout-chartaceous very opaque brown, pinnated, pinnæ numerous approximate lowest ones small remote sessile horizontal, supreme ones gradually smaller and terminating in a pinnatifid acumen, the rest 1-3 inches long lanceolate obtuse or acuminate generally strongly serrated, serratures sometimes unequally bi-tridentate, the superior base truncated and with a more or less distinct auricle, inferior base more or less excised (never auricled) veins erecto-patent simple or once or twice forked, sori copious linear regular nearer the costa than the margin, involucre narrow very firm and rigid brown sometimes black. *Hook. Sp. Fil.* iii. p. 149; *Kaulfs En. Fil.* p. 169; *A. pellucidum* *Lam. Encycl.* ii. p. 306; *A. stenopteris* *Kze. in Bot. Zeit.* vi. p. 174? *A. acutinsculum* *Bl. En. Fil. Jav.* p. 178? *A. approximatum* *Bl. En. Fil. Jav.* p. 179; *A. Torresianum* *Gaud. in Freyc. Voy.* p. 317; *A. Meyenianum* *Presl*; *A. plumosum* *Bory*; *A. Helsinbergii* *Sieb. Fl. Mirt.* n. 316.

The figure is taken from Sir W. Hooker's *Sp. Fil.* Nearly allied to *A. longissimum* but differing in having the caudex and stipes furnished with black scaly hairs and in the base of the pinnæ only being auricled at the superior base.

Hab.: Burmah (Parish) Penang, Guahan Island, Solomon Island, Java, Madagascar, Borne, Luzon, Mauritius, Bourbon.

PLATE No. CXCIV.



Asplenium hirtum
(Kaulfs)

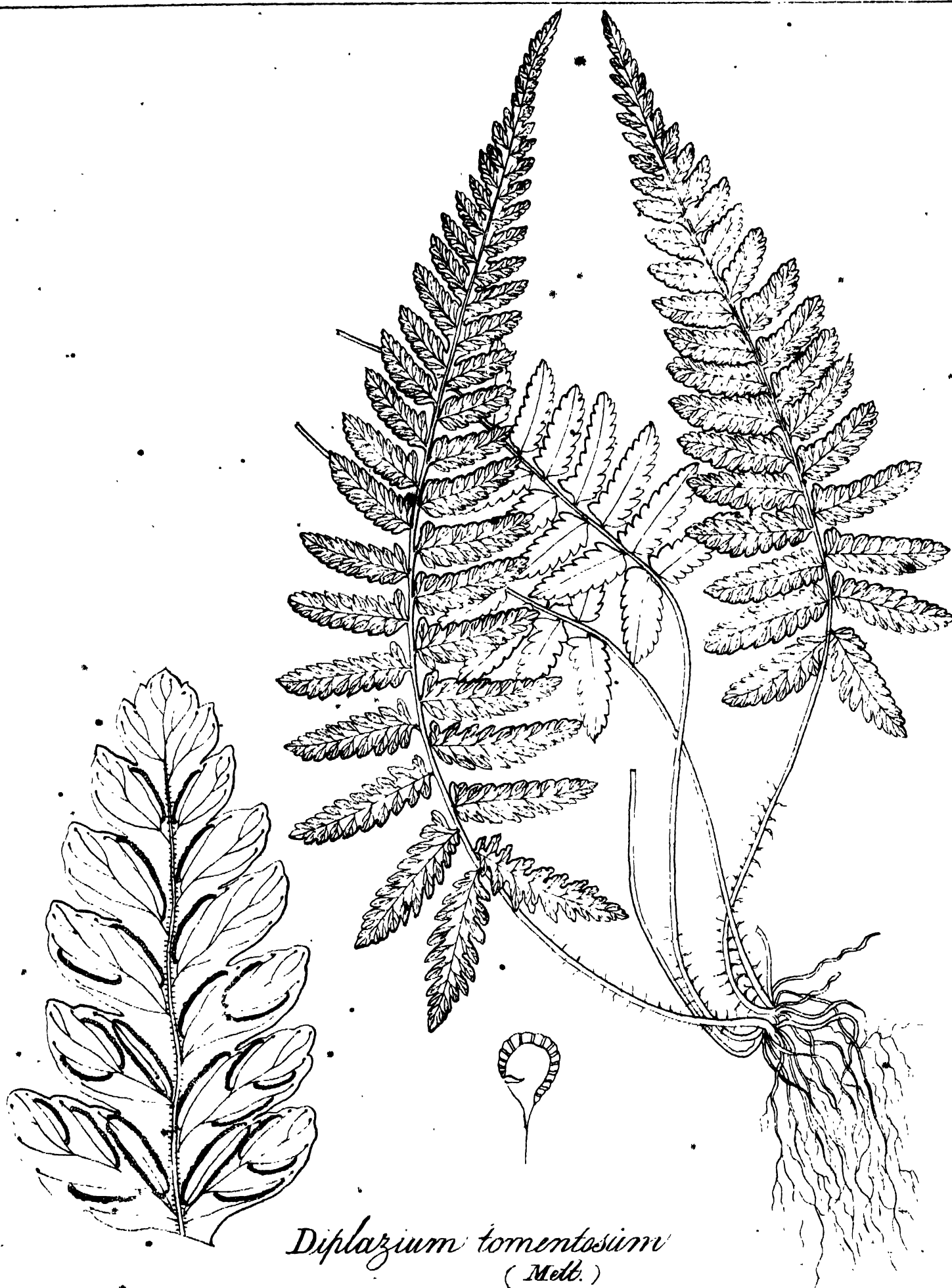
DIPLAZIUM. (See "Ferns of Southern India.")

DIPLAZIUM TOMENTOSUM. (Mett.) Caudex small tortuous knotty scaly above sending down numerous wiry branched roots, stipites tufted 4-5 inches to a span long hispid especially towards the base with subulate blackish-brown scales, fronds 6-10 inches long firm-coriaceous oblong-ovate acuminate pinnate, pinnatifid at the apex, pinnæ approximate $1\frac{1}{2}$ - $2\frac{1}{4}$ inches long $\frac{1}{2}$ - $\frac{3}{4}$ of an inch wide sessile from an obliquely truncated auriculated base linear-oblong acute rarely subfalcate pinnatifid about half way down to the rachis, segments acute subfalcate entire, or slightly sinuate and toothed at the apex, lower pairs of pinnæ reflexed superior one serrated, segments of the acumen toothed at the apex, veins pinnated on each lobe or segment simple or one-forked, sori few 1-4 in each segment often diplazioid, involucre brown, membrane erose at the margin. *Hook. Sp. Fil.* iii. 249 ; *Mett. Asplen.* p. 182. (excl. syn.).—*Diplazium Bl. En. Fil. Jav.* p. 192. *Asplenium argutum.* *Fée in 8^{me} Mém.* p. 53. t. 24. p. 192 ; *A. marginatum Wall. Cat. n.* 2204 and 2209 (according to *Mettenius and Moore.*)

The Specimen figured is from Burmah (Parish) when fresh it has quite a pale metallic lustre, which is lost in drying.

Hab. Burmah, Mergui, Java, Malacca, Khasya.

PLATE No. CXCIV.



Diplazium tomentosum
(Mett.)

Comandos. Del.

Transf. Moortee
Lith C Venkathayaloo Rajoo.

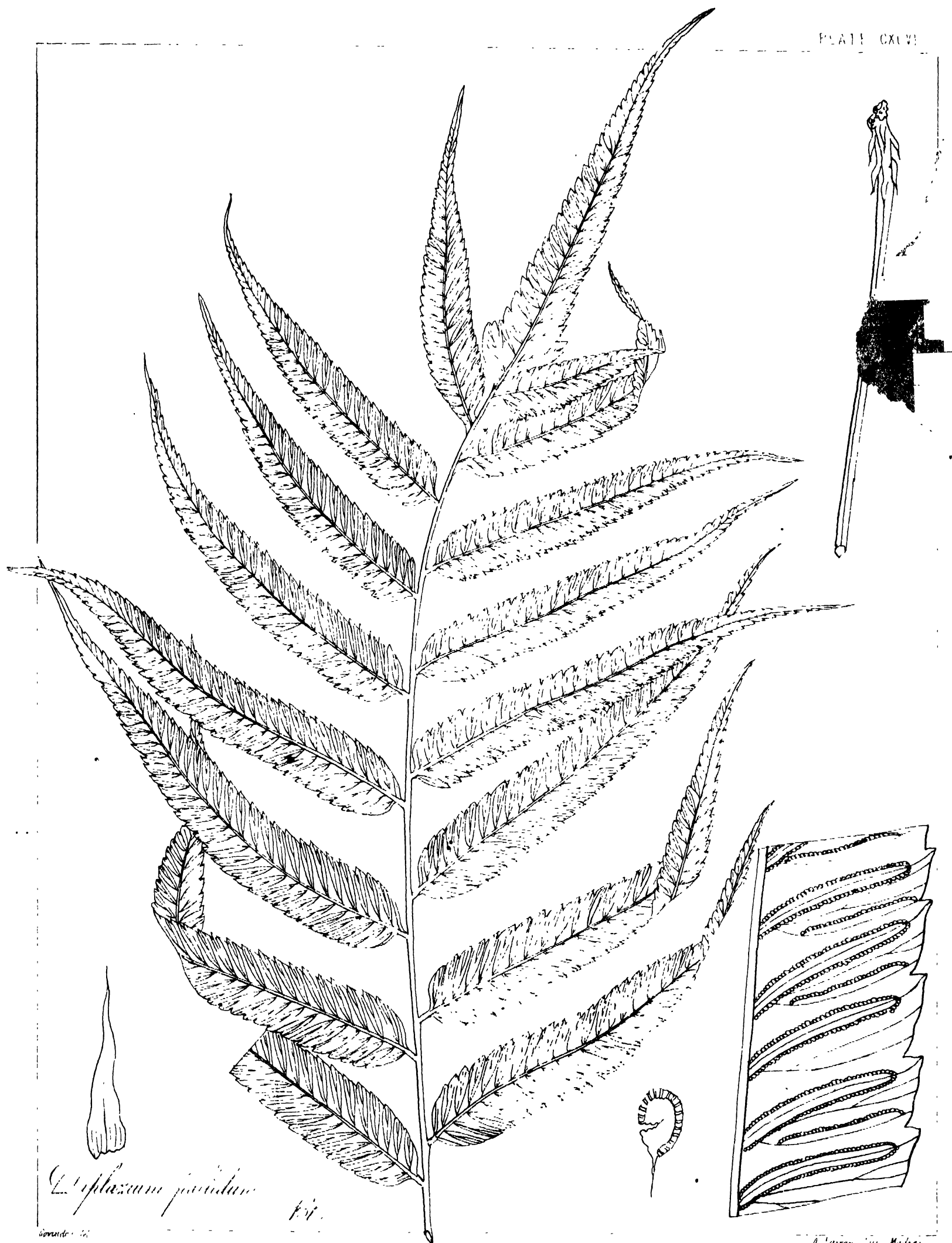
DIPLAZIUM. (See "Ferns of Southern India," p. 53.)

DIPLAZIUM PALLIDUM. (Bl.) Caudex ? stipes a foot or more long stramineous or subcastaneous deciduously scaly at the base, frond 1½-2 feet long ovate acuminate subcoriaceous, often pale whitish-green when dry, pinnated, pinnae numerous approximate mostly petiolate horizontal 5-6 inches long ½-¾ of an inch broad from a somewhat rounded or obliquely cuneated base linear-oblong acuminate falcate sharply and subspinulose serrated, terminal one petiolate and similar to the rest or larger and broad and pinnatifid at the base from being formed of dwarfed and confluent pinnae, very coarsely serrated towards the finely acuminate apex, veins very patent immersed generally twice dichotomous the lowest superior branch (arising from near the costa) bearing the linear sorus along its whole length rarely diplazioid and only from 1-3 at the superior and mostly truncated but not auricled base, involucres narrow firm-membranaceous. *Hook. Sp. Fil.* iii. 238.—*Bl. En. Fil. Jav.* p. 176.—*Kze. in Bot. Zeit.* vi. p. 146.—*Metten Asplen.* p. 176. t. 5. f. 9, 10. (*Single pinna, nat. size, and sori magnified—very faithful.*) *Moore, Ind. Fil.* p. 151. *Aspl. calophyllum*, *J. Sm. in Hook. Journ. Bot.* iii. p. 408, *Metten Asplen.* p. 176.

The specimen figured is from Moulmein. (Parish).

Hab. Moulmein, Luzon, S. Camarines, Java.

PLATE No. CXCVI.



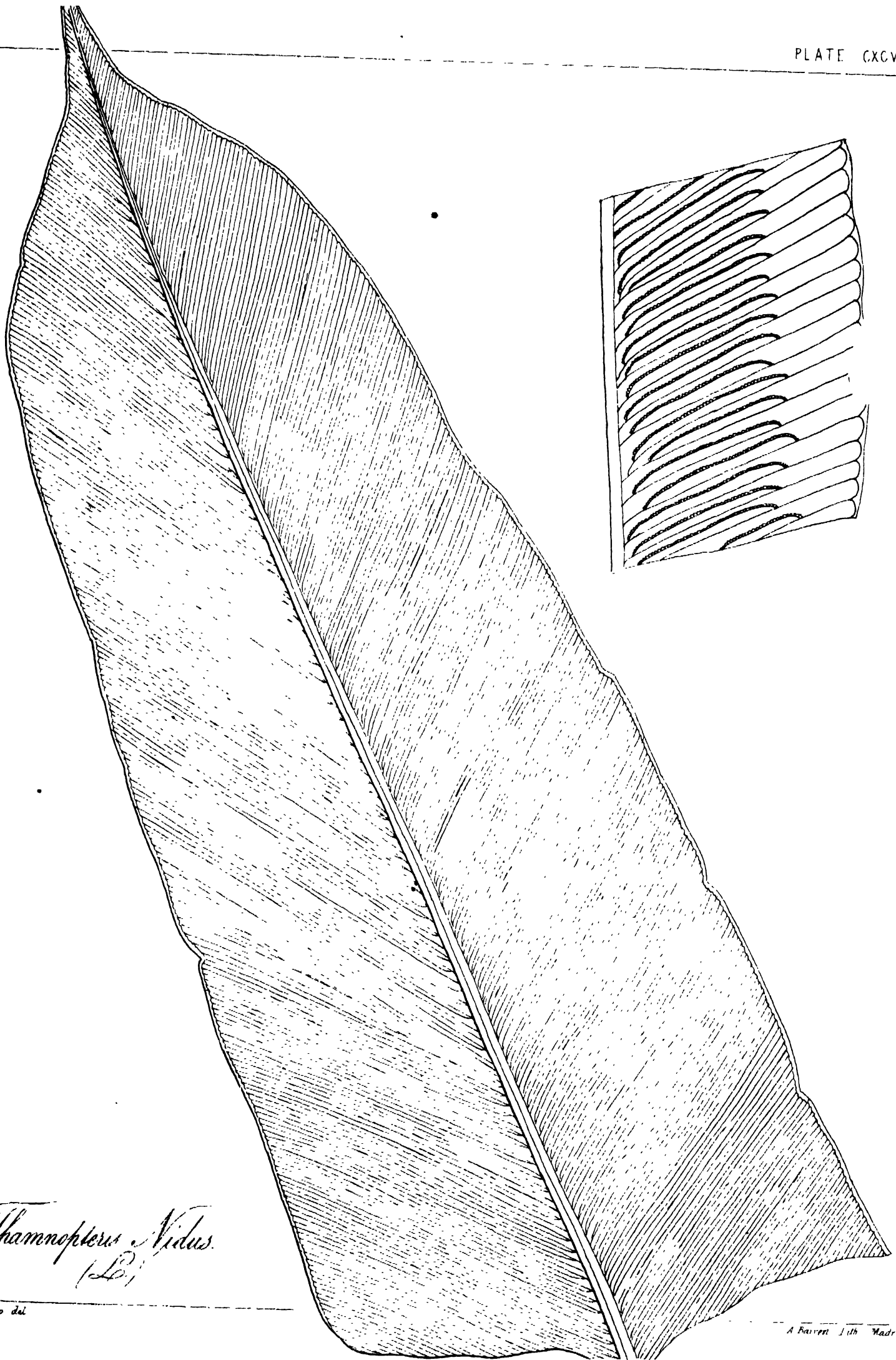
THAMNOPTERIS. (See "Ferns of Southern India," p. 42.)

THAMNOPTERIS NIDUS. (L.) Fronds ample 2-6 feet long spathulato-lanceolate acute or acuminate at the apex tapering at the base and more or less decurrent upon a short or elongated stipes, costa semiterete at the back, sori extending from the costa and reaching about halfway towards the margin. *Hook. Sp. Fl.* iii. 77.—*Linn. Sp. Pl.* p. 1,537.—*Sw. Syn. Fil.* p. 74.—*Willd. Sp. Pl.* v. p. 303.—*Wall. Cat.* n. 198.—*Hook. Bot. Mag.* t. 3, 101.—*Mett. Asplen.* p. 85. *Thamnopteris Nidus and Orientalis*, *Pr. Epim.* 68: *Thamn. Mauritiana* *Pr. Epim.* 68. *Neottopteris Nidus*, *J. Sm., Fée, Brack?*

The specimen figured is from Birmah (Parish) except in its larger size it is scarcely distinguishable from *T. Phillitidis* (Don.) figured at plate No. CXXIII of the Ferns of Southern India.

Hab. Himalayas, Assam, Malacca, Penang, Malay Islands, Birmah, Mauritius, Elizabeth Islands, Oahu, Sandwich Islands, Society Islands, Canton, Chusan, Bonin Islands, Australia, Norfolk Island, Madagascar.

PLATE No. CXCVII,



Thamnopteris vidua
(L.)

Govindoo del

A. Everett Lith Madras

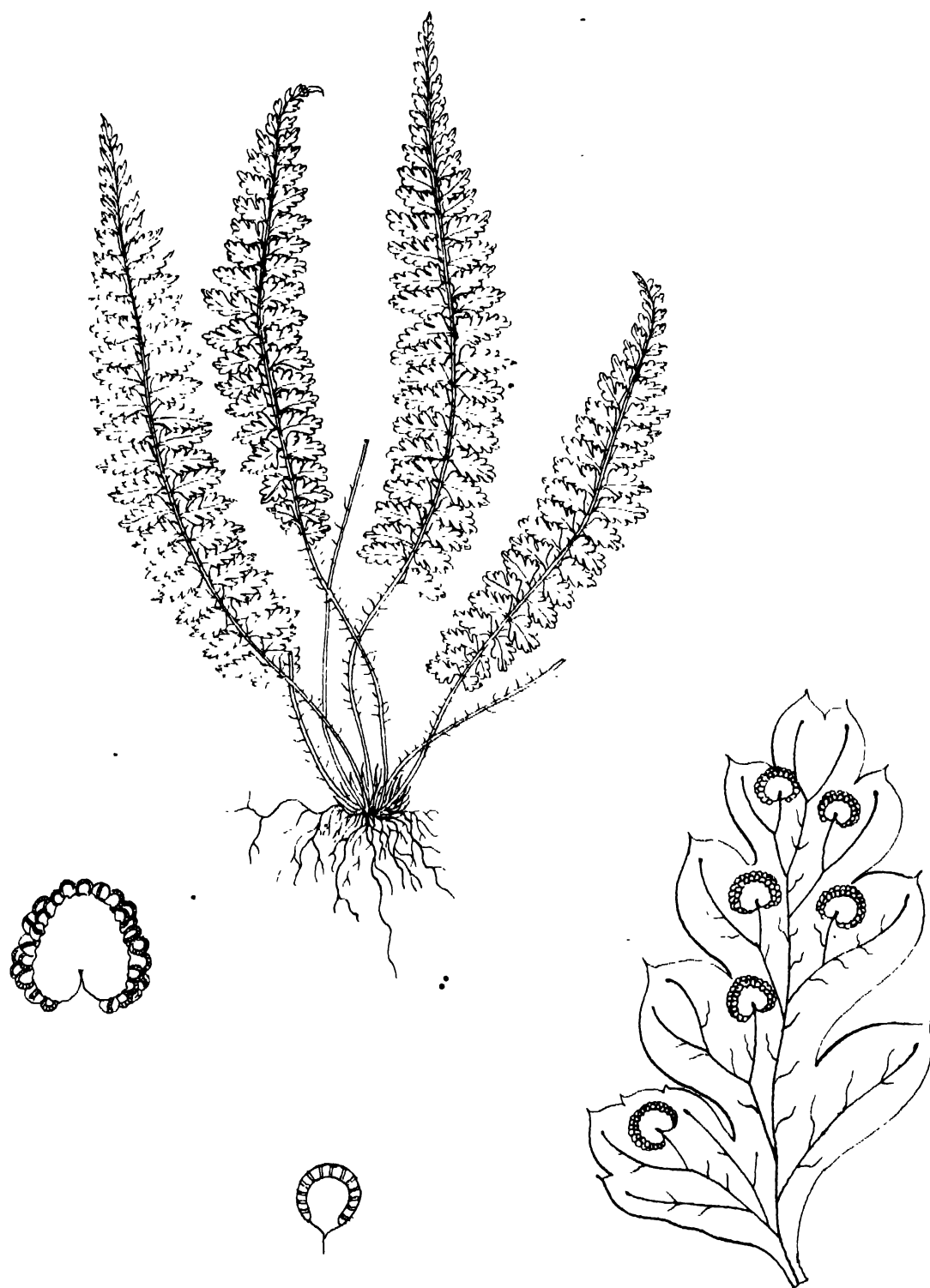
LASTREA. (See "Ferns of Southern India," p. 33.)

LASTREA GRACILIS. (Moore.) Caudex erect paleaceous stipites 1-2 inches long sparingly paleaceous fronds 4-6 inches long $\frac{3}{4}$ to 1 inch broad, lanceolate, pinnate, pinnae numerous approximate slightly hairy on the veins beneath 3-4 lines long 2-3 broad, very shortly petiolate pinnatifid $\frac{1}{2}$ or $\frac{2}{3}$ ds down to the rachis, superior basal segment 2-4 lobed rest generally entire, all sharply acuminate, veins forked or pinnate terminating within the margin, sori one to each segment, terminal on a veinlet, involucre reniform.

The specimen figured is from the N. W. Himalaya (Hooker fil et Thomson.)

Hab. Himalayas.

PLATE No. CXCVIII.



Lastrea gracilis.
A. Moore

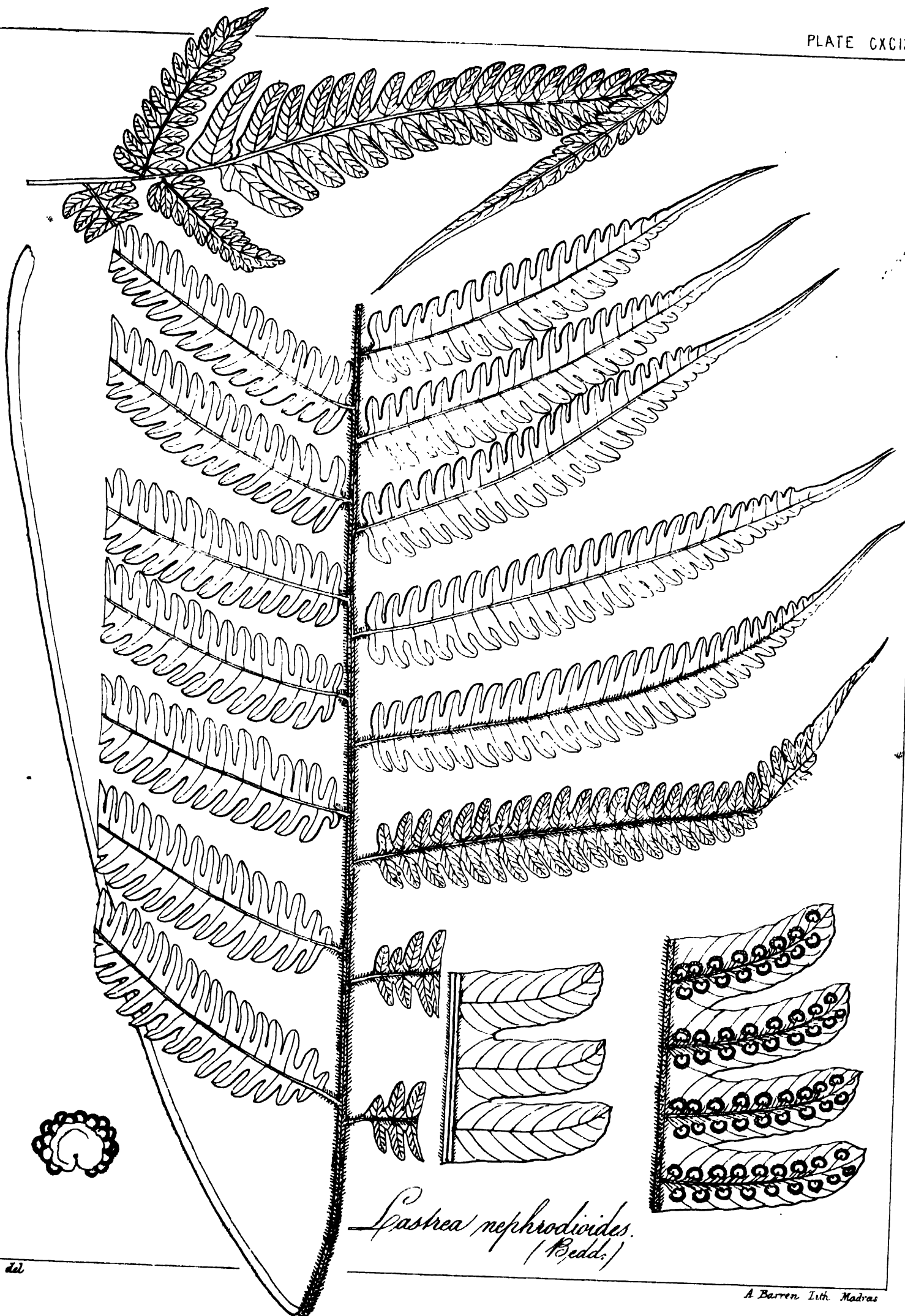
LASTREA.

LASTREA NEPHRODIOIDES. (Bedd.) Caudex ? stipes $1\frac{1}{2}$ foot long channelled above slightly hirsute, fronds deltoid ovate, firm membranaceous, pinnate, pinnae pinnatifid, rachis costa and costules beneath hirsute the rest glabrous, pinnae petiolate (petioles $\frac{1}{2}$ inch long) lower ones not reduced in size, pinnatifid nearly $\frac{2}{3}$ ds down to the rachis, segments obtuse subfalcate subentire, basal ones reduced in size, costa deeply channelled above, veins pinnate the lower pair free (as in Lastrea) or joining just before entering the sinus of the segments (as in Nephrodium) remaining ones simple (or rarely forked) reaching the margin, sori one on, or a little below the centre of each vein, involucre reniform glabrous.

The specimen figured is from Birmah. (Parish.)

Hab. Birmah,

PLATE No. CXCIX.



Lactrea nephrodoides
(Bedd.)

Gerando del

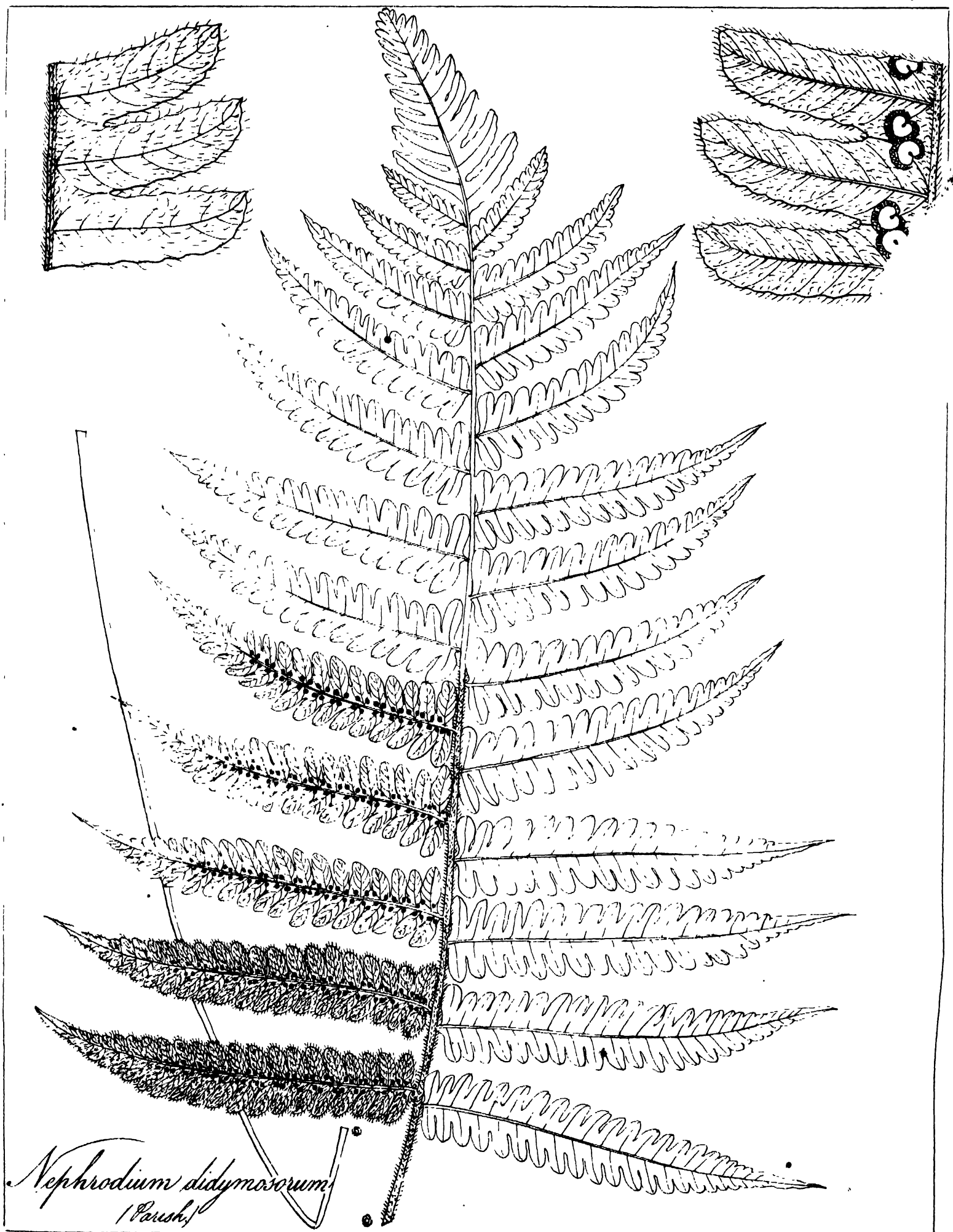
A. Barron Lith. Madras

NEPHRODIUM. (See "Ferns of Southern India," p. 29.)

NEPHRODIUM DIDYMOSORUM. (Parish.) Caudex ? stipes a span or more long, fronds soft, membranaceous 1 foot or more long, all over pubescent with long weak hairs, oblongo lanceolate pinnated pinnatifid at the apex, pinnae numerous horizontal scarcely petiolate (lowest pair deflexed) lanceolate acuminate broader at the base, superior basal segment being considerably larger than the others, 3-4 inches long, $\frac{1}{2}$ to nearly 1 inch broad, pinnatifid $\frac{1}{2}$ to $\frac{3}{4}$ ds down to the rachis, segments very obtuse crenated, lowest pair of veins uniting and sending out a veinlet which is prolonged to the sinus of the segment, the rest free simple, sori one pair at the junction of the two basal veins, none on the segments.

The drawing is taken from a solitary specimen collected by Mr. Parish in Birmanah, and forwarded to me under the above name; it is probably only a form of *N. molle* (Desv.) as I find fronds of *Nephrodium extensum* var. *minor* with the same peculiar seeding (viz: solitary twin sori at the junction of the lower veins) whilst other fronds on the same plant are in full seed, (vide pl. CCI.) if Mr. Parish's plant is constant in this habit of seeding, it is an interesting variety.

PLATE No. CC,



NEPHRODIUM.

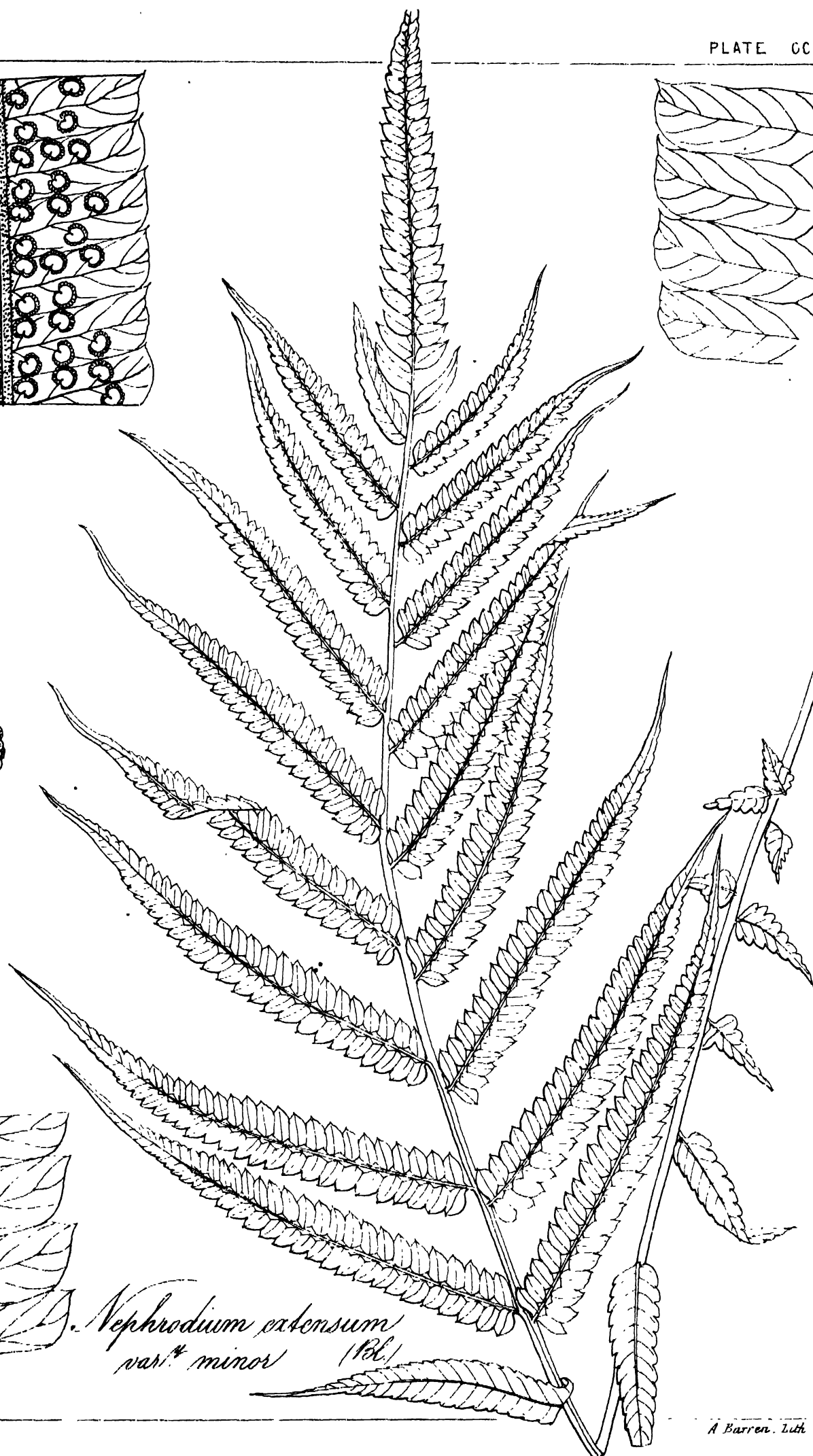
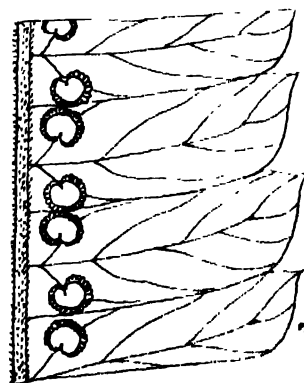
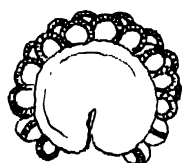
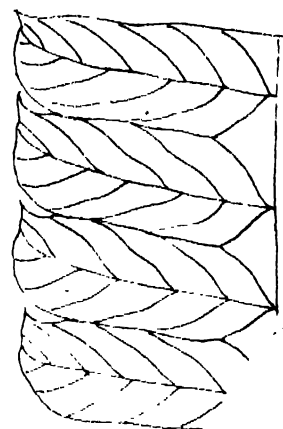
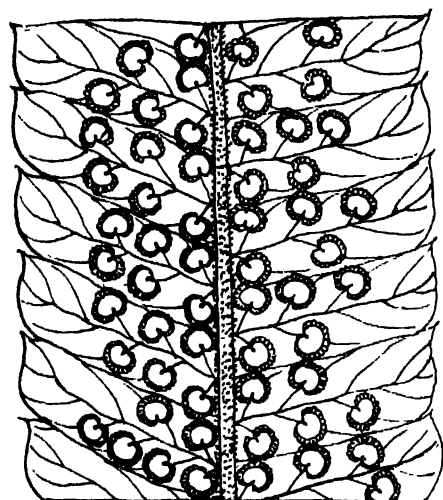
NEPHRODIUM EXTENSUM. (Bl) var. MINOR.

(See "Ferns of Southern India," p 31.)

Only differing from the ordinary form of *N. extensum* in its much smaller size, fronds 6 inches to 2 feet high, 2 to 5 inches broad pinnae $1\frac{1}{2}$ to 4 inches long.

The specimen figured is from Ceylon. (Thwaites).

PLATE No. CCI.



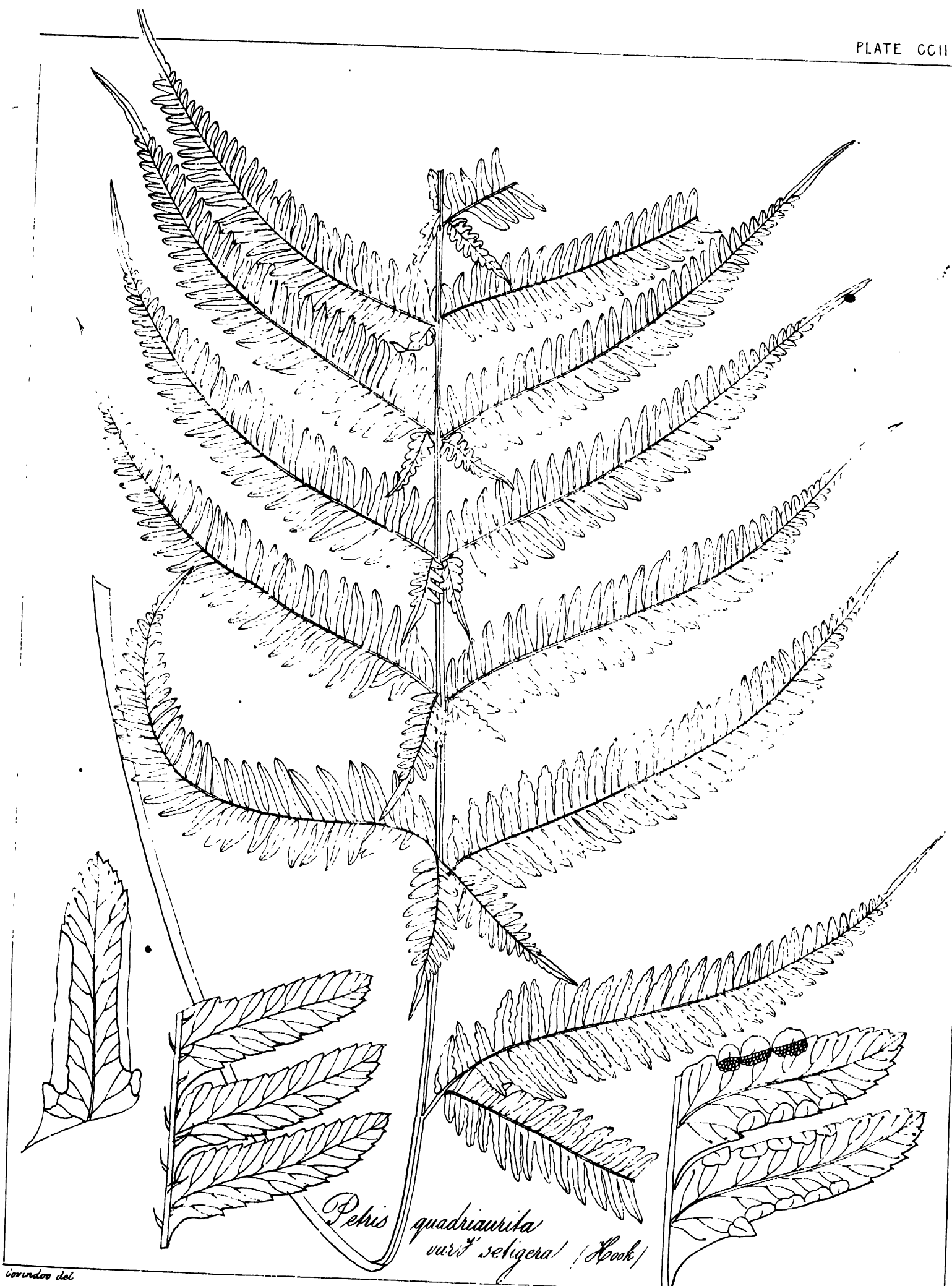
Nephrodium extensum
var. *minor* (Pb.)

PTERIS (See "Ferns of Southern India," p 11)

PTERIS QUADRIAURITA VAR. SETIGERA. (Hook) Of small size of a pale green color, texture remarkably thin and membranaceous, the 7 or 8 lower pinnae have the lower basal segment transformed into a pinnatifid pinnule, costa above furnished with weak pellucid setae, fertile segments being often crenated the sori are interrupted or punctiform (as in *Cheilanthes*) though the general form is that of *Pteris*.

The specimen figured is from Moulmein (Limestone rocks) (Parish) Mr Parish considers this a distinct species but it was named as above by Sir W. Hooker, it is a very interesting variety and well worth a figure in this work.

PLATE No. CCII,



Petio quadriaurita
var. setigera (Hook.)

copied from

A. Barren, Lith. Madras

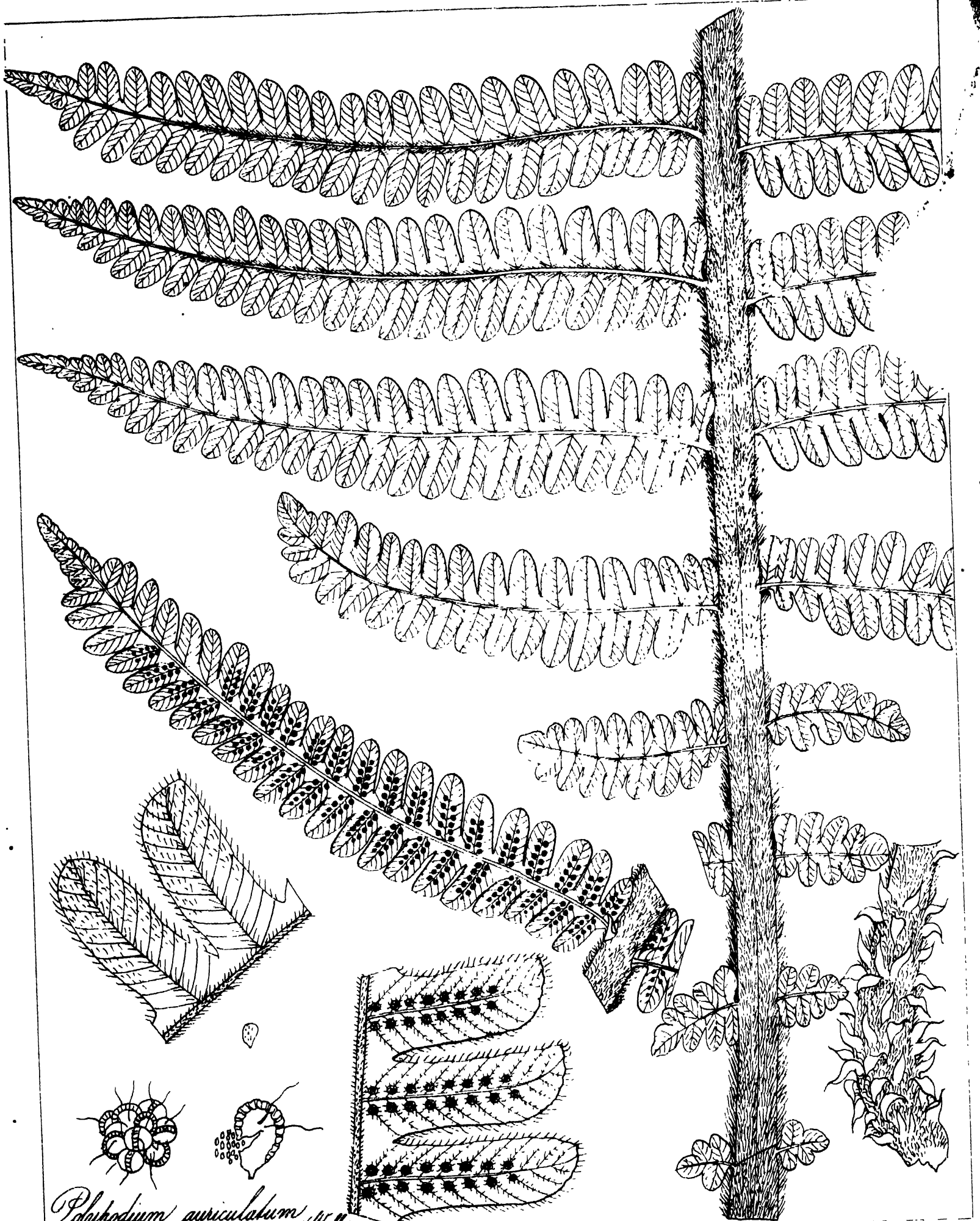
POLYPODIUM. (See "Ferns of Southern India," p. 55.)

POLYPODIUM AURICULATUM. (Wall.) Caudex ? stipes stout densely villous with white matted hairs (as is the rachis) furnished below with numerous ovate black shining scales, fronds ample firm membranaceous 3 feet and more long, 16 inches broad, oblongo-lanceolate acuminate gradually attenuated below by the dwarfing of the pinnæ, pinnated, pinnæ numerous about 8 inches long by 1 inch broad, sessile and furnished at the base on the under side with a curious hooked gland, pinnatifid nearly to the rachis, segments broad oblong very obtuse entire subfalcate, costa costules and veins villous and the segments sparingly hairy on both sides between the veins, veins pinnate simple extending to the margin lowest pair entering the margin above the sinus, soriferous below the middle, spore cases furnished with a few long weak hairs.—Sir W. Hooker does not mention the curious glands and states that the lowest pair of veins meet in the sinus, there however can be but little doubt that this is Wallich's plant.

The specimen figured is from Dalhousie, Himalayas. (Col. Dyas.)

Hab. Himalayas.

PLATE No. CCIII.



Polypodium auriculatum (Wall.)

Griseb. det.

A. Barren. Lith. Madras

PLEOPELTIS. (See "Ferns of Southern India," p. 57.)

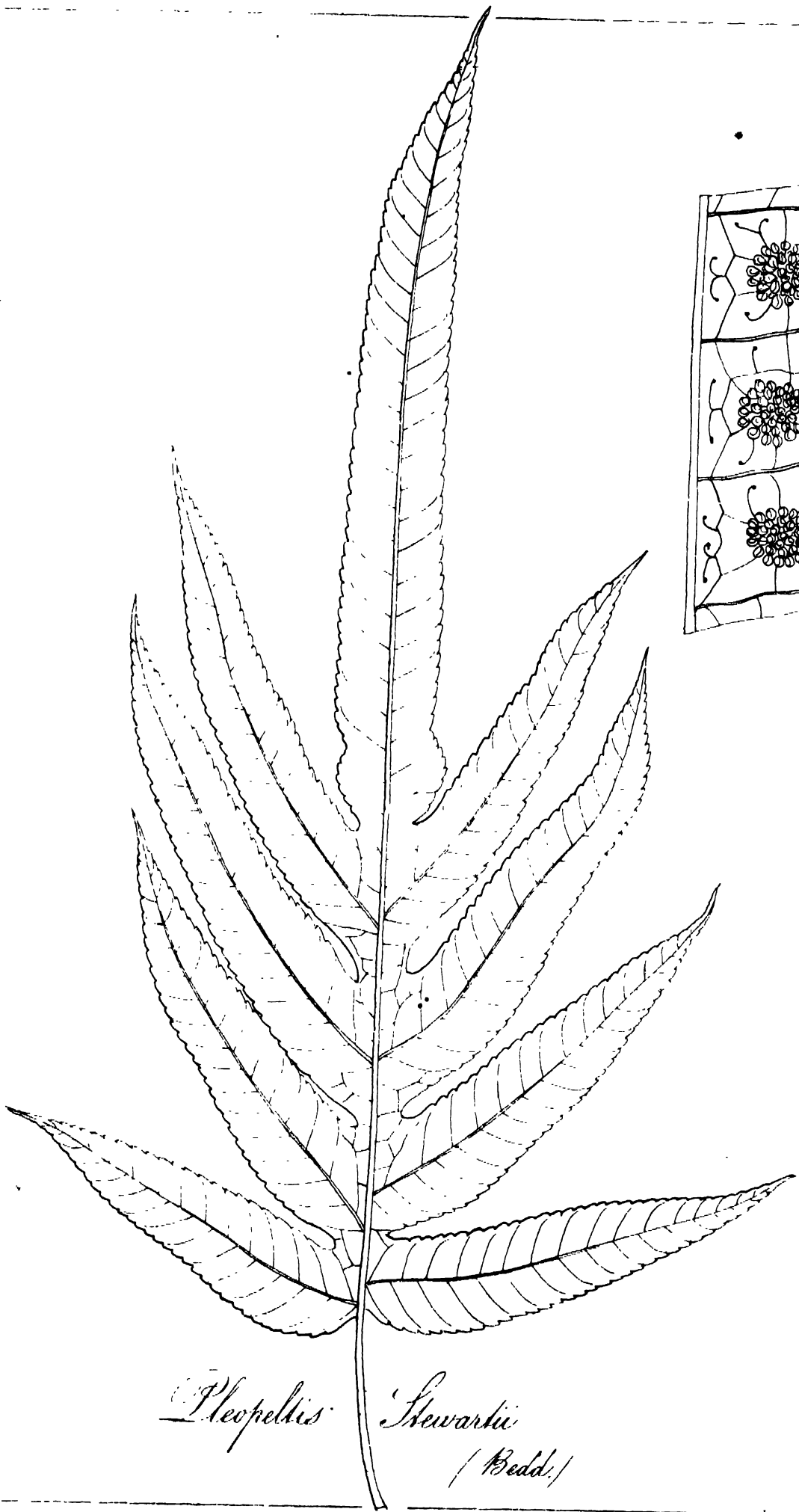
PLEOPELTIS STEWARTII. (Bedd.) Caudex ? stipes 2-4 inches long, fronds 6-10 inches long subcoriaceous-membranaceous glabrous ovate with a cordate base, deeply pinnatifid with narrow sinuses, segments 9, 3-4 inches long by $\frac{1}{2}$ to 1 inch broad lanceolate, finely acuminate, margin crenate, lowest pair not deflexed, superior ones as large or larger than the lower ones all pointing upwards, terminal one much elongated and often sub-auricled at the base, venation manifest, costules not very prominent not extending to the margin, the intermediate veins forming about 4 series of areoles between the costa and margin in which are included free clavate simple or forked veinlets the apex of which form shining resinous dots on the upper surface of the frond, sori superficial in a single series between the 2nd and 3rd areole much nearer the costa than the margin.

Nearly allied to *P. ebinesses* (pl. CXXXVIII of this work) the superior segments of the frond however are as large or larger than the lower ones instead of decreasing in size and they all point upwards, the terminal segment is much elongated, a series of specimens may however prove them to be both forms of one species, the plant here figured has very shining resinous dots on the upper surface formed by the apices of the clavate veinlets.

The specimen figured is from the Himalayas. (Gurhwal.) (Dr. Stewart.)

Hab. Himalayas.

PLATE No. CCIV.



Pleopeltis Stewartii
(Bedd.)

Windsor del.

A. Barren. Lith. Madras

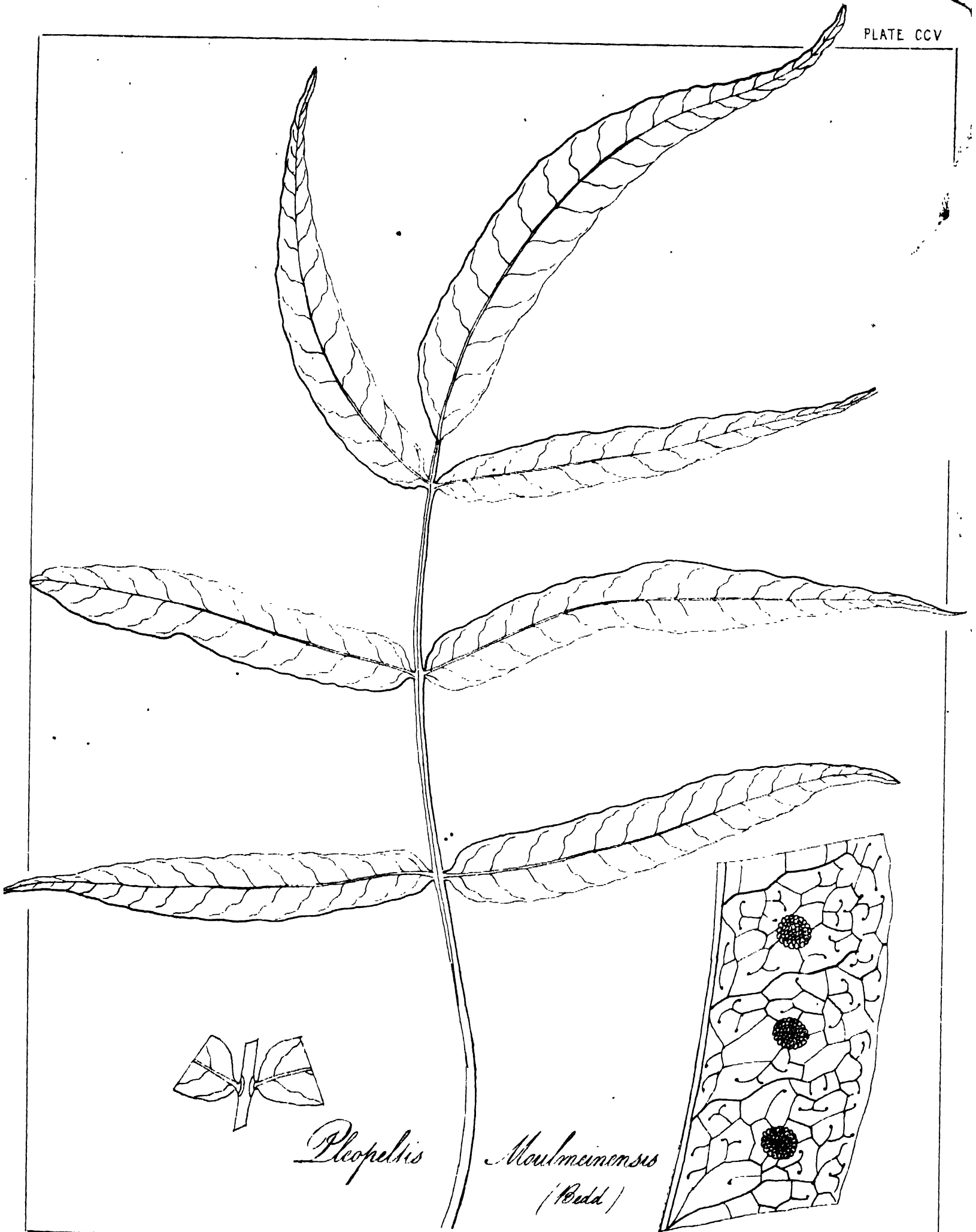
PLEOPELTIS.

PLEOPELTIS MOULMEINENSIS (Bedd) Caudex ? fronds 8-10 inches long 6-10 inches broad, firm-membranaceous pinnae in 3 remote pairs sessile (except the terminal one) and articulate with the rachis 4-5 inches long $\frac{1}{2}$ to $\frac{3}{4}$ of an inch broad oblong lanceolate acuminate entire but undulated on the margin, costa very prominent, primary veins or costules flexuose prominent, between which is a network of small areoles (formed by the secondary veins) in which are included free clavate simple or forked veinlets, and slightly sunk, one between each of the primary veins about $\frac{1}{2}$ way between the costa and margin.

The drawing is taken from a single specimen found by the Rev. Parish on the Moulmein mountains at an elevation of 5,000 feet. Mr. Parish states that the caudex is creeping.

Hab, Moulmein.

PLATE No. CCV.



Pleopeltis

Moulmeinensis
(Bedd.)

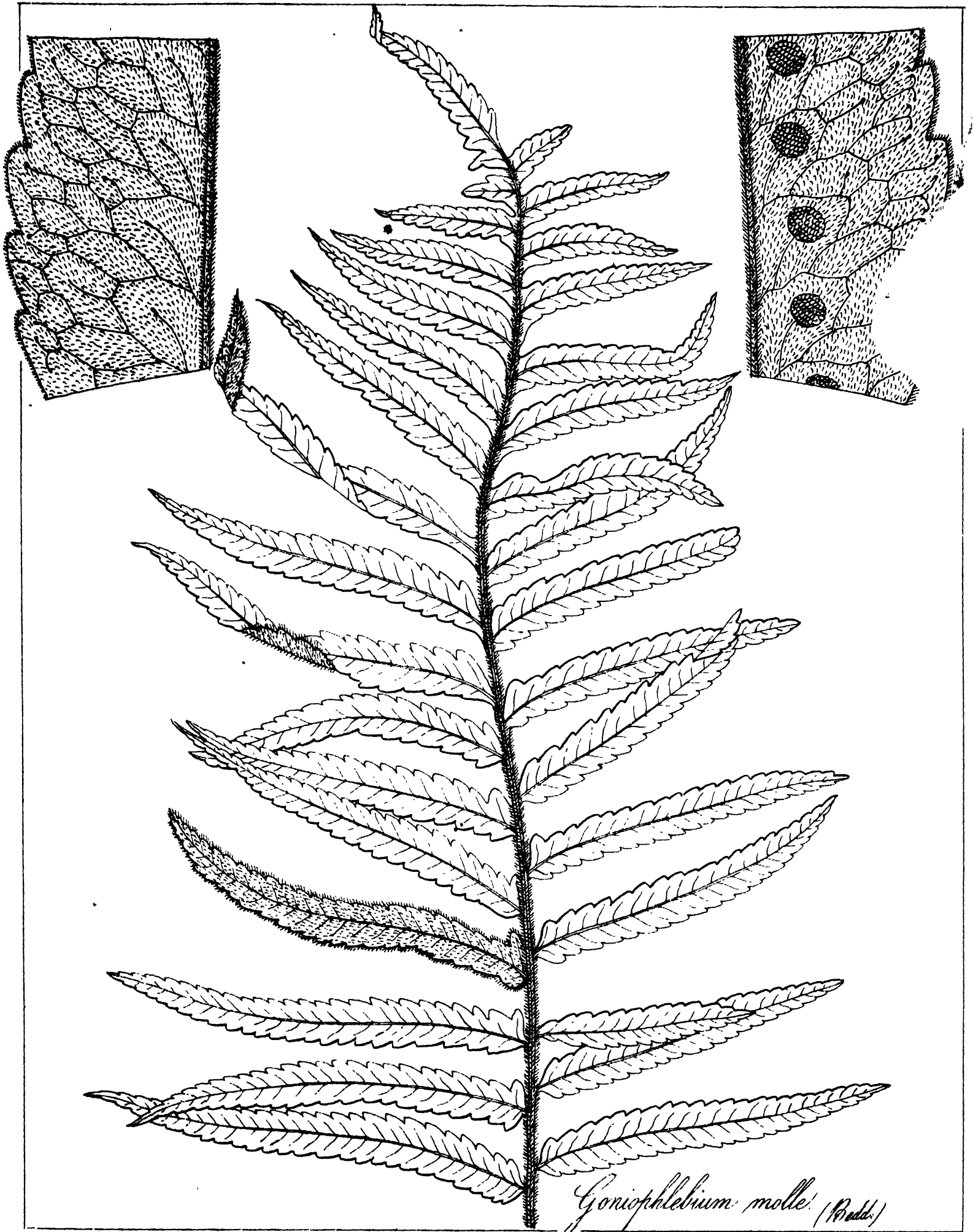
GONIOPHLEBIUM. (See page 5.)

GONIOPHLEBIUM MOLLE. (Bedd.) Caudex creeping size of the stem of a tobacco pipe densely covered with reddish brown subulate scales, fronds $1\frac{1}{2}$ foot long, 7-8 inches broad, oblong acuminate membranaceous, pinnae numerous 3-4 inches long, $\frac{1}{2}$ an inch wide, furnished on both sides as in the rachis with soft weak whitish hairs, sinuato-crenate, superior base often sub-auricled, superior ones decurrent on the rachis, remainder sessile from a broad base, or inferior ones subpetiolate, veins forming 2 series of areoles, the lower of which has the soriferous veinlet arising from the side of the areole distant from the costa, marginal veinlets free or rarely uniting simple or forked.

The specimen figured is from Birmah (Parish.)

Hab. Birmah.

PLATE No. CCVI.



Goniophlebium molle (Radd.)

Corindes, del.

A. Barron, Lith. Madras

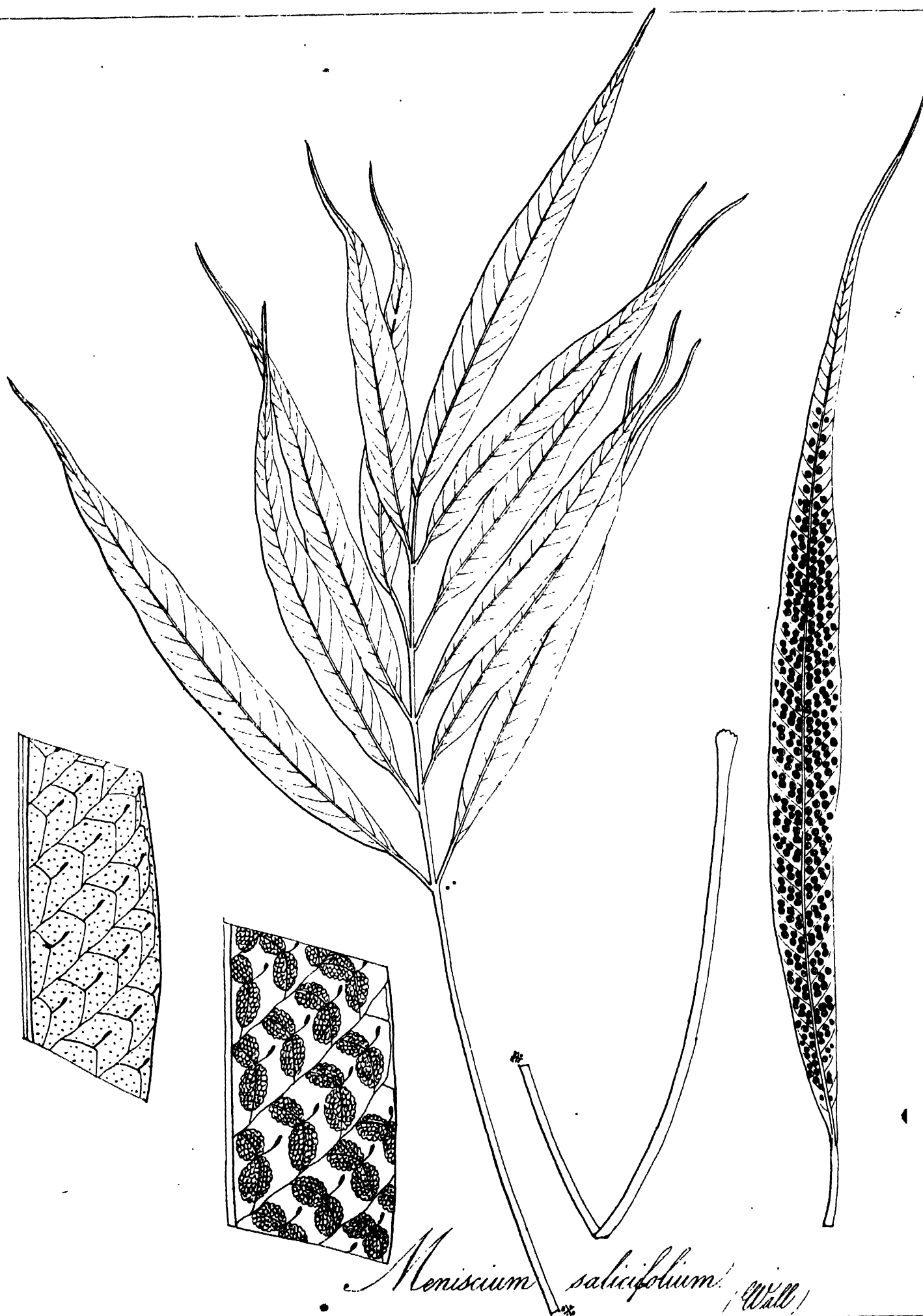
MENISCIUM. (See "Ferns of Southern India," p. 19.)

MENISCIUM SALICIFOLIUM. (Wall.); very glabrous, caudex ? stipites a foot or more long and as well as the rachis stramineous-brown very glossy, fronds 1-1½ foot long subovate subcoriaceous-membranaceous pinnated, pinnæ rather distant spreading 6-7 inches long 4-5 lines broad near the middle, linear-lanceolate very long and finely attenuated into the stipes, the margins quite entire, sori 4-7 the prolonged veinlet short sori oblong formed of two confluent rounded ones.—*Hook. Sp. Fil.* v. 164.—*Wall. Cat.* n. 63.—*Hook. Ic Pl X.* t. 990. (or *Cent. of Ferns*, t. 90.)

The specimen figured is from Singapore.

Hab. Singapore, Penang.

• PLATE No. CCVII.



Moniscium salicifolium, Wall.

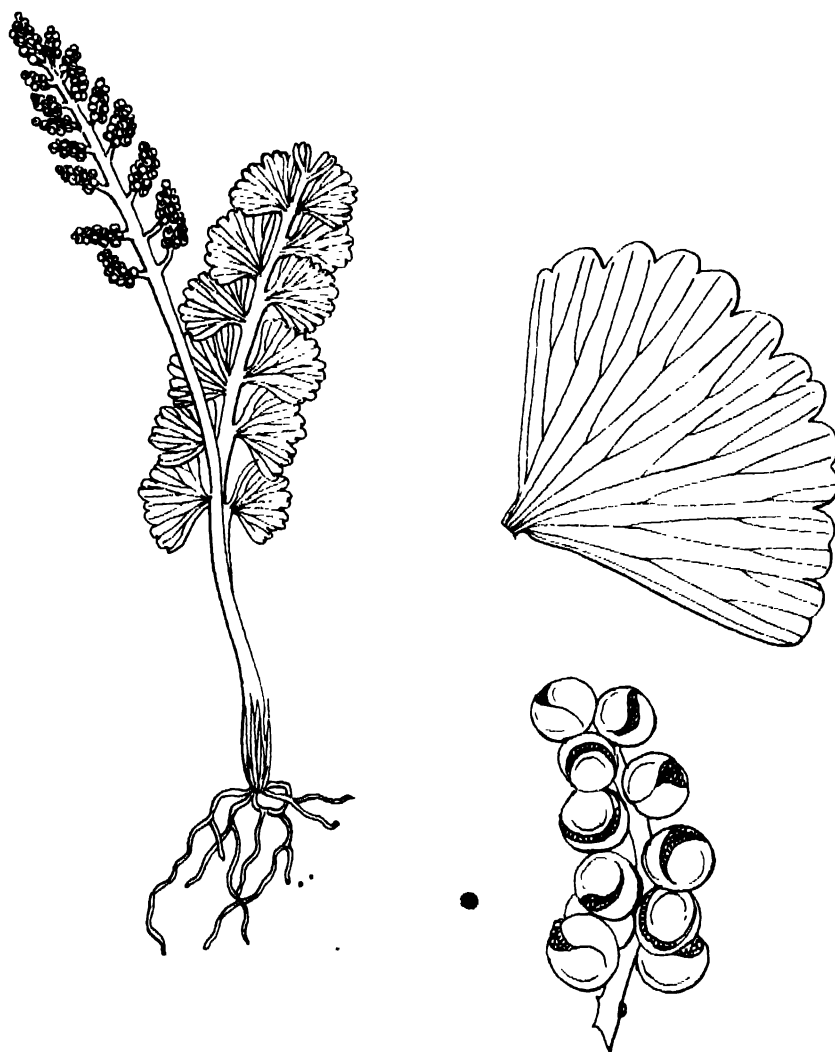
BOTRYCHIUM. (See "Ferns of Southern India," p. 22.)

BOTRYCHIUM LUNARIA. (Swartz) rhizome small scarcely thickened enclosed by brown sheaths furnished with stoutish fleshy brittle branched roots—stipes erect smooth cylindrical hollow succulent, vernation plicate or folded straight the fertile branch clasped by the sterile before unfolding, fronds solitary 3-10 inches high firm stout fleshy, sterile branch oblong pinnate smooth, pinnæ 4-7 pairs flabellate or lunate the margins crenate (rarely partially fertile) fertile branch pinnate or bipinnate, venation (barren pinnæ) flabellato-furcate, i.e. the vein enters at the base and is repeatedly forked, veins not quite extending to the margin:

The specimen figured is from Deoban (Punjab.)

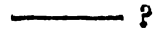
Hab. Himalayas, Europe, N. America, Australia.

PLATE No. CCVIII.



Botrychium Lunaria
(Sw.)

.

 — ?

This figure is taken from a unique specimen of a very curious fern found by the Rev C. S. Parish on the banks of the Pak-
chan river below Mergui at the extreme southern limit of Birmah, it was not in fructification, it is probably a Davallia.

PLATE No. CCIX.

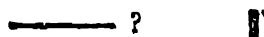
.



Davallia?

Conrad del.

A. Barron. Lith. Madras



This figure represents a fern found by the Rev. C. S. Parish creeping on trees in the same locality with that figured in the preceding plate, it also was not to be found in seed, a portion was forwarded to Sir W. Hooker who did not pronounce an opinion on its affinity, but stated that he had specimens of an allied plant from Borneo (also not in fructification)

PLATE No. CCX.

It is hoped that the publication of the plates of these two interesting ferns will induce some botanist or lover of ferns in Birmah to search for their fertile fronds.



ACROSTICHEÆ.

* * * *Veins reticulated.*

B. Fronds fertile on the upper pinnae.

PHOTINOPTERIS. J. Sm. Hook. Journ. of Bot. iii. 103.—iv. 65.

Gen. Char. *Sori* superficial, non-indusiate, the *receptacles* occupying the under surface of the contracted upper pinnae. *Venæ* pinnate from a central costa, prominent; *venules* transversely anastomosing in unequal sub-hexagonal areoles, and producing divaricate secondary veinlets, which are clavate at the apex, and free within the ultimate areoles.

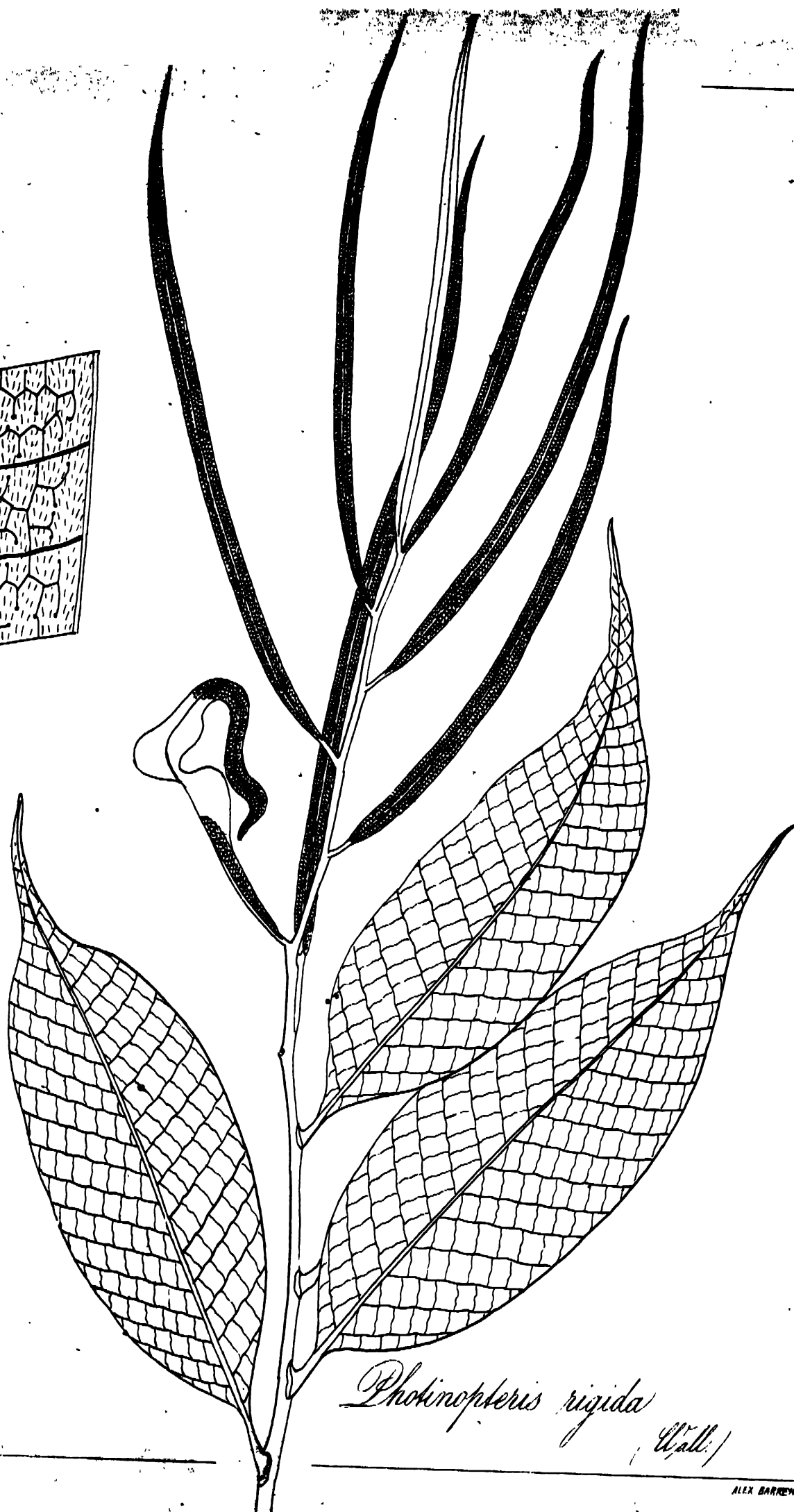
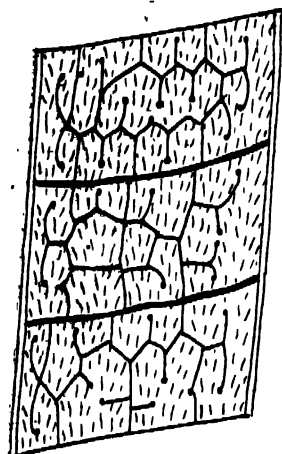
Fronds pinnate coriaceous, fertile and contracted in the upper part, pinnae articulate, auriculæform on the lower side at the base. Rhizome scandent. (Moore)

PHOTINOPTERIS RIGIDA. (Wall.) Caudex repent or scandent palaceous with elongated brown subulate fringed scales mixed with hair-like ones in age albo-glaucescent, stipites short nearly as thick as a writing-pen, fronds 1½-2-3 feet long broad-lanceolate, very hard-coriaceous glossy pinnate; *sterile* pinnae long-petiolate, distant 3-6 inches and more long, broad ovate acuminate, the apex generally caudate and curved upwards, venation manifest elevated on both sides, costules subflexuose united by transverse veins into four angled areoles which are again divided into lesser areoles including branched free clavate veinlets, petioles articulated on the rachis and dilated into a large orbicular scutiform base; sometimes these sterile pinnae occupy the whole frond, more frequently the rachis is suddenly elongated at the apex and bears 1-12-13 distant very contracted narrow-linear and *fertile* pinnae from 5-12 inches long soriferous except on the costa and on the slightly revolute margin. *Hook. Sp. Fil.* v. 281. *Wall. Cat. n.* 27 (1822);—*Lomaria speciosa*, *Bl. Fil. Jav.* p. 202. *Photinopteris simplex* J. Sm.;—*P. Horsfieldii*, J. Sm. (no description or character). *Hook. Gen. Fil. t.* 92. *Pr.—Moore.—Brack.—Fée, Acrost.* p. 102. *t.* 63.

The specimen figured is from Singapore.

Hab. Singapore, Java, Mindorn, and Isle of Bohol, Labuan, Luzon, Isle of Panay.

PLATE No. CCXI.

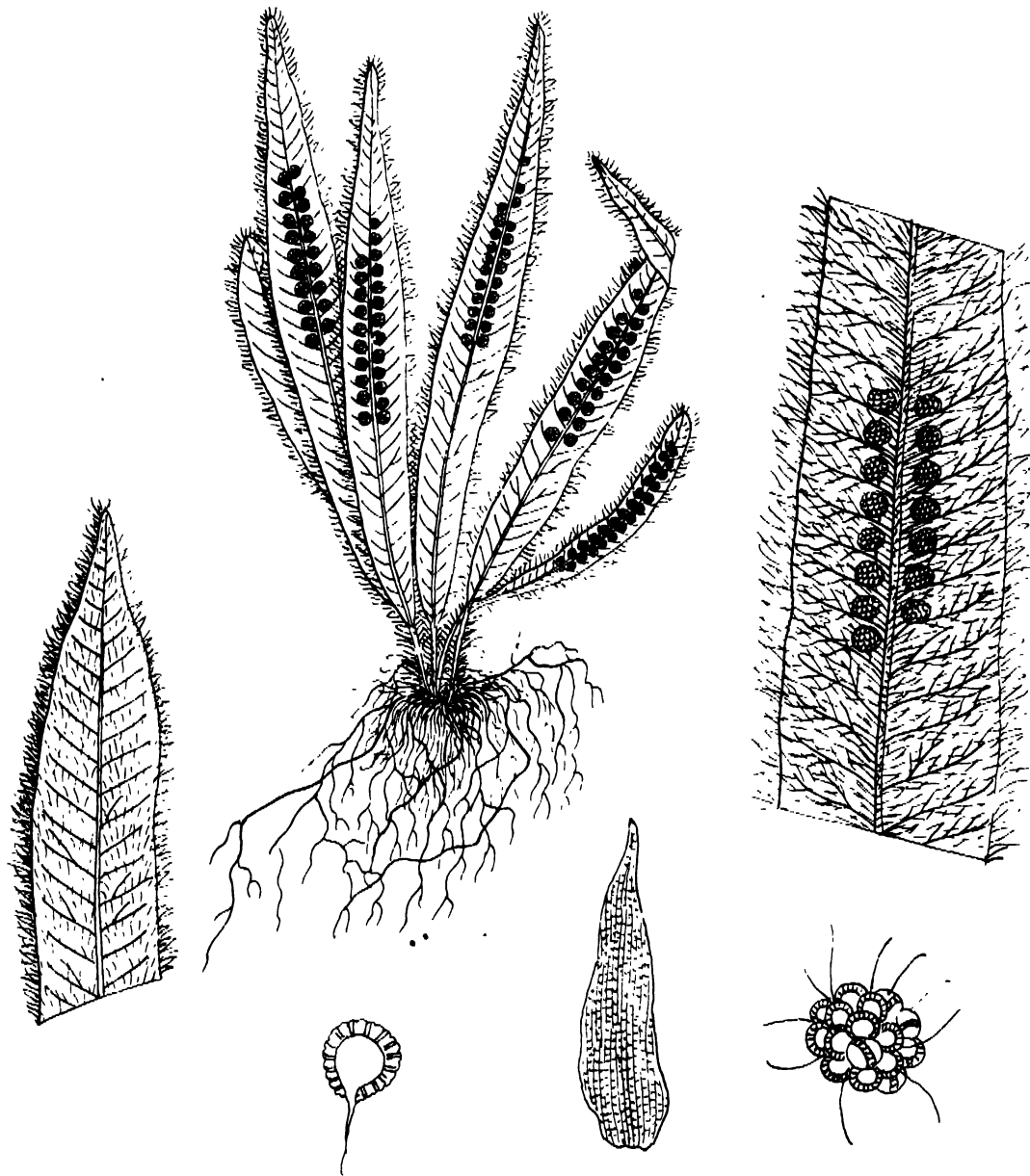


Photinopteris rigida Wall.

POLYPODIUM.

POLYPODIUM HIRTELLUM. (Bl.) Caudex small ascending scaly above, stipites tufted $\frac{1}{2}$ to $1\frac{1}{2}$ inch long, slender filiform villous with spreading reddish-brown hairs, fronds firm-membranaceous, linear-oblong to lanceolate, 1 to 4 or more inches long, $\frac{1}{8}$ th to $\frac{1}{4}$ rd of an inch broad, quite entire at the margin, attenuated at the base rather densely villous and ciliated with similar hairs to those of the stipites, veins spreading simple or often forked near the base, sori in a single regular series close to the costa, veins when simple soriferous near their base, when forked soriferous at the apex of the short fork. *Bl. En. Fil. Jav. p. 123.* *Hook. Sp. Fil. iv. 166*;—*Polypodium hirtum.* *Hook. Sp. Fil. iv. 170.* (not Mett.)

The specimen figured is from Ceylon. *Fig. clxxii. of this work (or P. lasisorum Hook.) is only a small form of this species and that name must consequently be reduced. I have just received copious specimens from Mr. Thwaites from Ceylon, which clearly show that the two forms belong to one species. Grammitis adspersa (Bl.) which I have received from Java is in no way different and Gram. pusilla (Bl.) which I have from Java, though it has a different look, is probably only a form of this species (and is referred to it by Sir W. Hooker), it has much narrower fronds and is not so copiously hairy, but the venation and position of the sori are the same. Polypodium hirtum (Mett.) not Hook. (which I have from Java under the name of Gram. fasciculata, Bl.) differs in its veins, being several times forked and in its much thicker texture, it is besides a much larger fern. Without copious specimens it would be impossible to determine the limits of the species of this group. I have lately received a species from Bourbon under the name of P. rufo-pilum (probably the P. setigerum of Blume) it has just the aspect of the fern here figured, and only differs in the veins being generally twice forked, and the sori (which are not so regular) being situated on both the superior and inferior fork, the upper portion of the frond could not however be distinguished from P. hirtellum, as the veins are there only once forked or even simple, and intermediate forms may prove this to be a form of "hirtellum."*



Polypodium hirtellum Nutt.

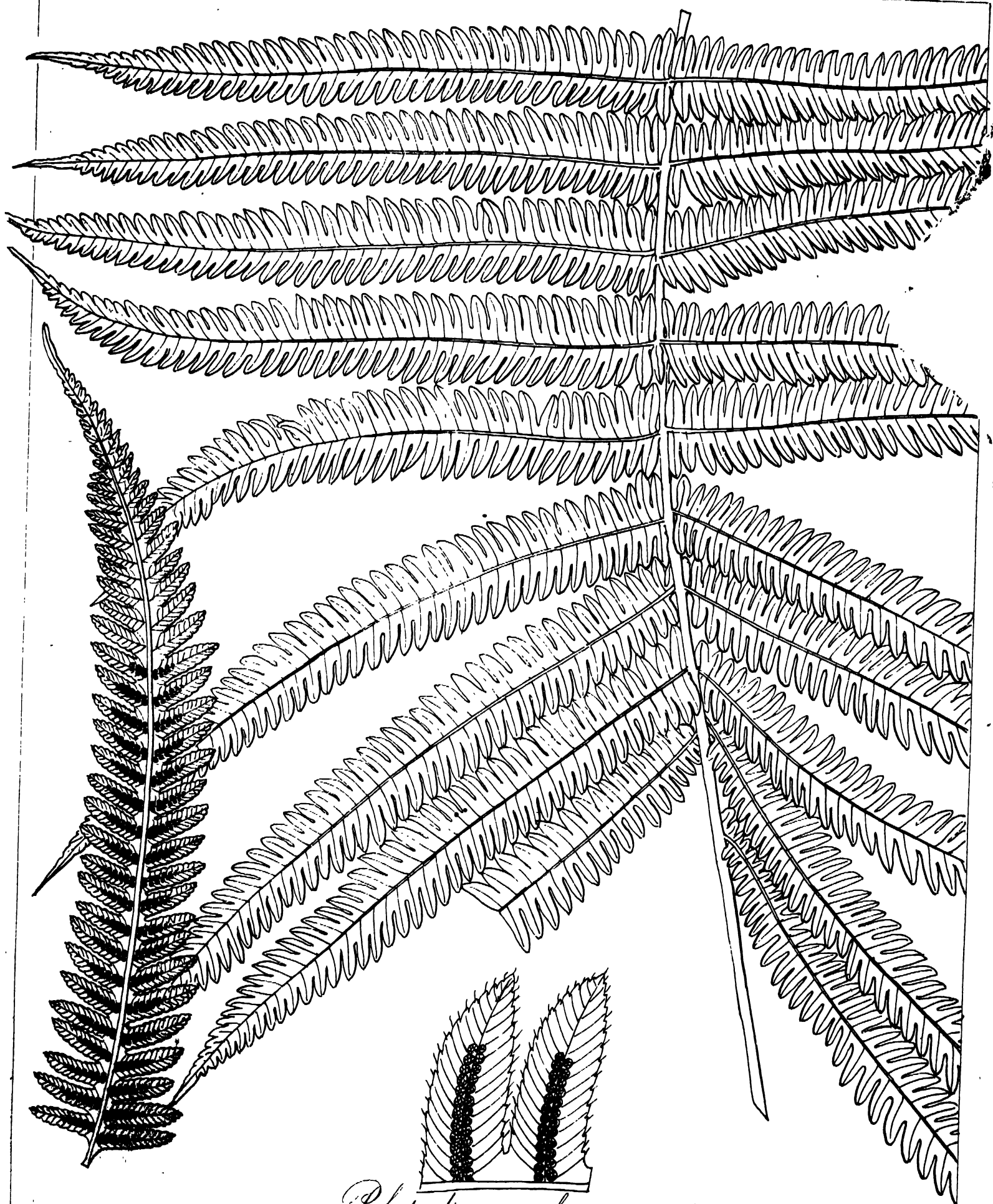
POLYPODIUM.

POLYPODIUM ERUBESCENS. (Wall.) Caudex ? stipites 1-2 feet and more long stout, as well as the rachis and costa more or less purplish-tawny, fronds in general ample but varying from 1 to 4 feet in length and from 6 inches to more than 2 feet in breadth, firm sub-coriaceous, broad-ovate acuminate, pinnated to the extremity, pinnae 3-16 inches long $\frac{1}{2}$ -1 $\frac{1}{2}$ inch wide, approximate, sessile, elongate-oblong, the sides parallel for a long way and then gradually acuminate to a serrated apex, deeply nearly to the costa pinnatifid, segments oblong subfalcate rather acute entire or obscurely serrated, veins approximate simple free, two lowermost opposite pair meeting but scarcely uniting at the sinus, soriferous always at the very base so as to form two lines or series (at length confluent) one on each side and close to the costa not extending to the apex of the segment, main rachis stout with a broad groove on the upper side (when dry). *Hook. Sp. Fil.* iv. 236 ;—*P. erubescens*, *Wall. Cat.* n. 330.

The specimen figured is from Dalhousie—(Col. Dyas).

Hab. Throughout the Himalays, Sikkim alt. 2,000 ft., Khasya, Malacca.

PLATE No. CCXIII.



Polypodium erubescens. Wall.

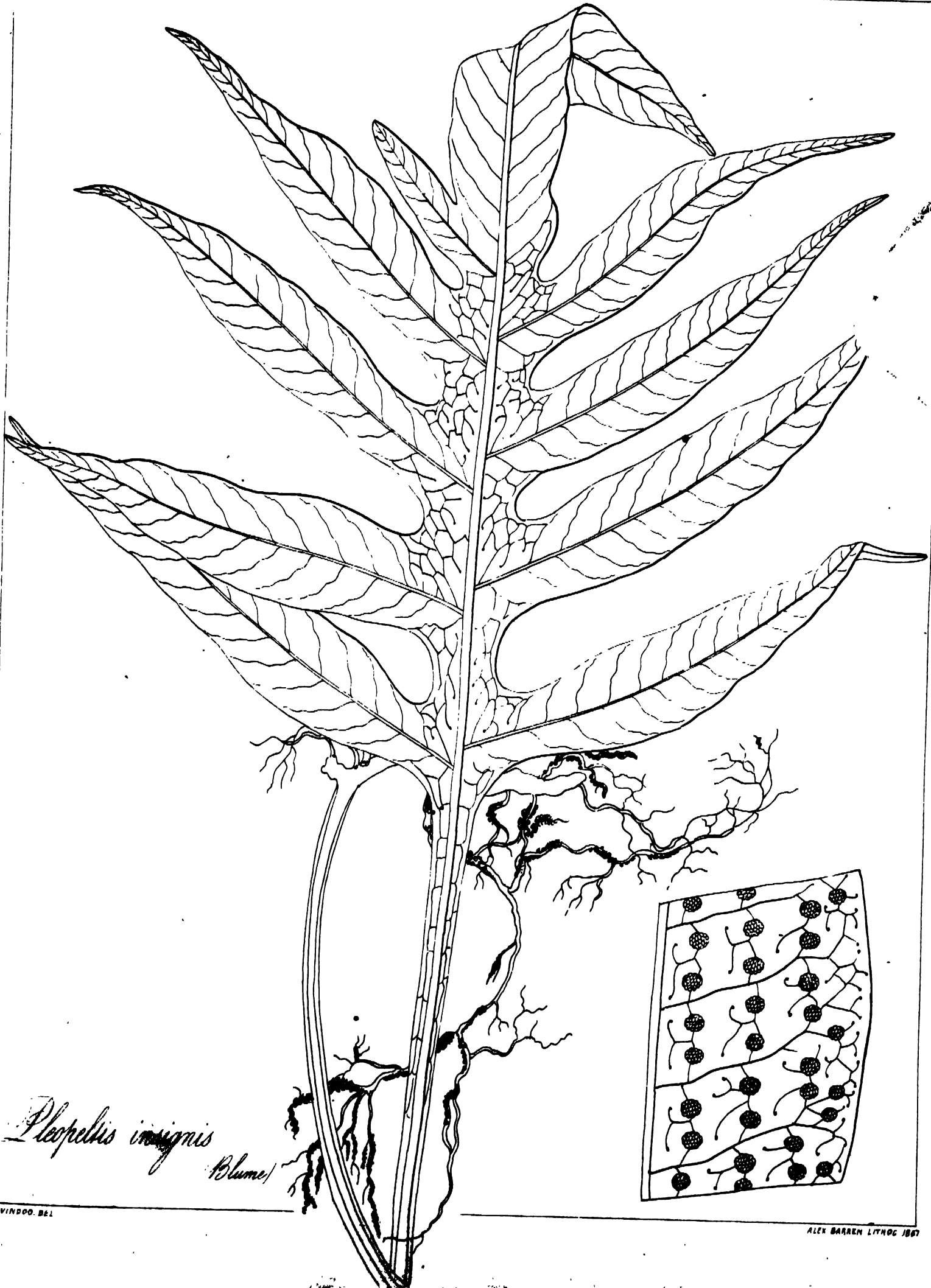
PLEOPELTIS.

PLEOPELTIS INSIGNIS. (Bl.) Caudex short creeping paleaceous with deciduous ferruginous scales, stipes 1-2 inches or more long (according to the length of the decurrent wing of the frond), fronds subtriangular-ovate membranaceous glabrous 4-6 inches long (independent of the decurrent wing) and as much broad, subdeltoid, deeply pinnatifid with 5-9 lanceolate spreading acuminate segments, the base of the fronds subcuneate and decurrently attenuated so that the stipes is winged for the greater part or even the whole of its length, venation distinct, costules slender veniform united by transverse veins forming 2-4 series of primary areoles which are filled by a very delicate network forming lesser areoles including free divaricating veinlets, sori very small, generally two on each transverse veinlet, but appearing to be irregularly scattered. *Hook. Sp. Fil.* v. 78. *Bl. Fil. Jav.* p. 166. t. 74. (*very good*). *Metten. Polyp.* p. 117 ;—*P. diffundens*, *Kze. in Bot. Zeit.* iv. p. 422 ;—*Drynaria decurrens*, *Brack. Fil. U. S. Expl. Exped.* p. 48 ;—*D. palmata J. Sm.* (*as relates to Cuming's n. 52 ; not Polyp. palmatum, Bl.*)

The specimen figured is from Malacca.

Hab. Malacca, Java, Luzon.

PLATE No. CCXIV.



Pleopeltis insignis Blume

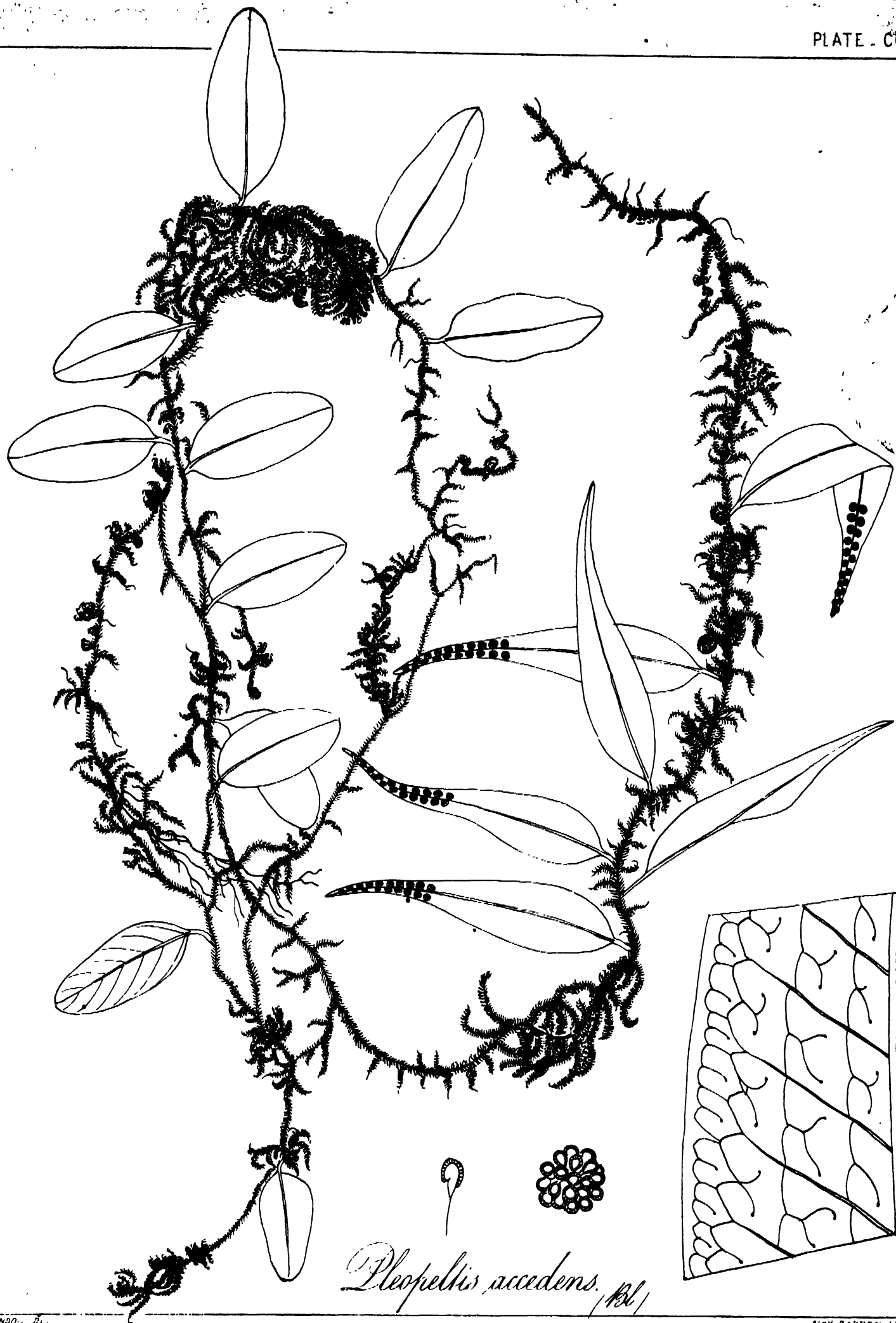
PLEOPELTIS.

PLEOPELTIS ACCEDENS. (Bl.) Caudex very long slender filiform scarcely paleaceous, attached to the bark of trees by copious woolly radicles, stipites scattered 2-5 lines long, fronds subcoriaceous-membranaceous, opaque glabrous entire; *sterile* ones 1-1½ inch long oblong ovate obtuse; *sterile* ones 2-3½ inches long from a broad cuneate base rather suddenly long but obtusely-acuminated, venation obscure, costules indistinct, veins forming 3 large areoles, (in each of which is 1 large forked veinlet) and a smaller marginal areole, sori large for the size of the plant on the acuminate portion in a single series on each side of the costa. *Hook. Sp. Fil.* v. 66. *Bl. En. Fil. Jav.* p. 121. *Metten. Polyp.* p. 92;—*P. cuspidiflorum*, *Reinw. in Herb. Hook.*;—*Drynaria J. Sm.* *Cuspidaria*, *Fée*;—*Drynaria acuminata*, *Brack. Fil. U. S. Expl. Exped.* p. 42.

The specimen figured is from Malacca.

Hab. Malacca, Java, Luzon, Fiji Islands, Sanaon and Navigator's Islands, and Tahiti.

PLATE No. CCXV.



Pleopeltis accedens, Bl.

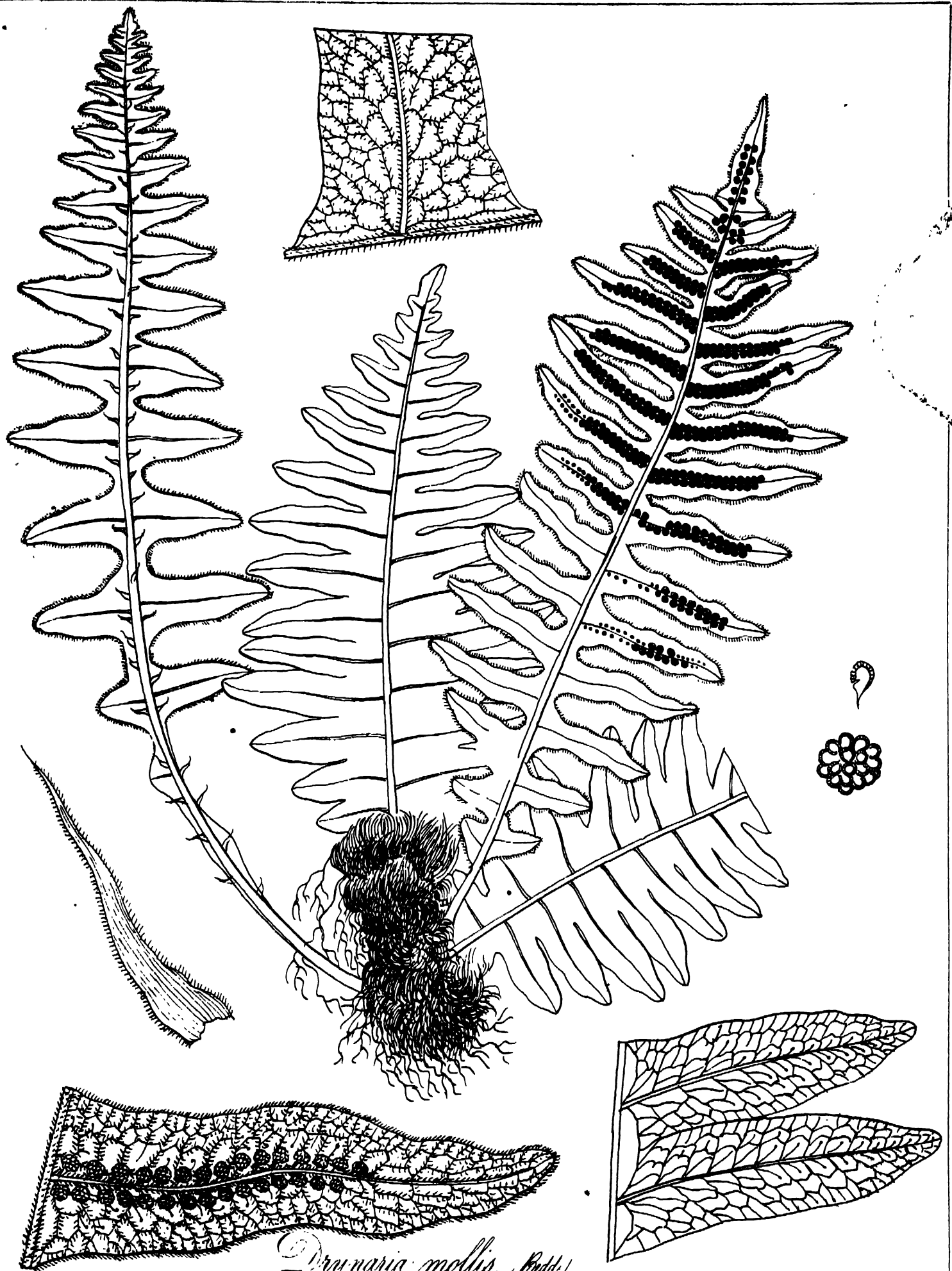
DRYNARIA.

DRYNARIA MOLLIS. (Bedd.) Caudex creeping, clothed with subulate golden transparent ciliated scales, fronds firm-membranaceous dimorphous; sterile ones 4-6 inches long, sessile ovate glabrous, deeply pinnatifid with the sinuses very narrow and the segments sometimes overlapping each other, fertile fronds very shortly stipitate (the dwarfed lower segments often extending nearly to the base of the rachis), ovato-lanceolate up to 1½ feet long 2 to 4 inches broad furnished with soft hairs on both sides and ciliated, deeply almost to the rachis pinnatifid, segments lanceolate 1 to 2 inches long ⅓rd to ½ an inch broad, nearly horizontal rather distant, the sinus being very broad, the lower ones dwarfed and gradually reduced to a decurrent wing, venation very prominent in the sterile fronds, but much less so in the fertile ones than in *D. propinqua*, veins forming 3 or 4 series of rather regular areoles in which are sometimes included free veinlets, sori forming only a single series close to the costa, each sorus being on the vein between the 1st and 2nd areole.

Nearly allied to D. propinqua, but differs in the softer texture of the fronds and in being hairy and in having almost sessile fertile fronds, the sterile fronds often become perfect skeletons of veins, the parenchyma falling away—fig. A. is a magnified portion of the sterile frond showing the venation.

The specimen figured is from Nynee Tal—(Col. Dyas).

PLATE No. CCXVI.

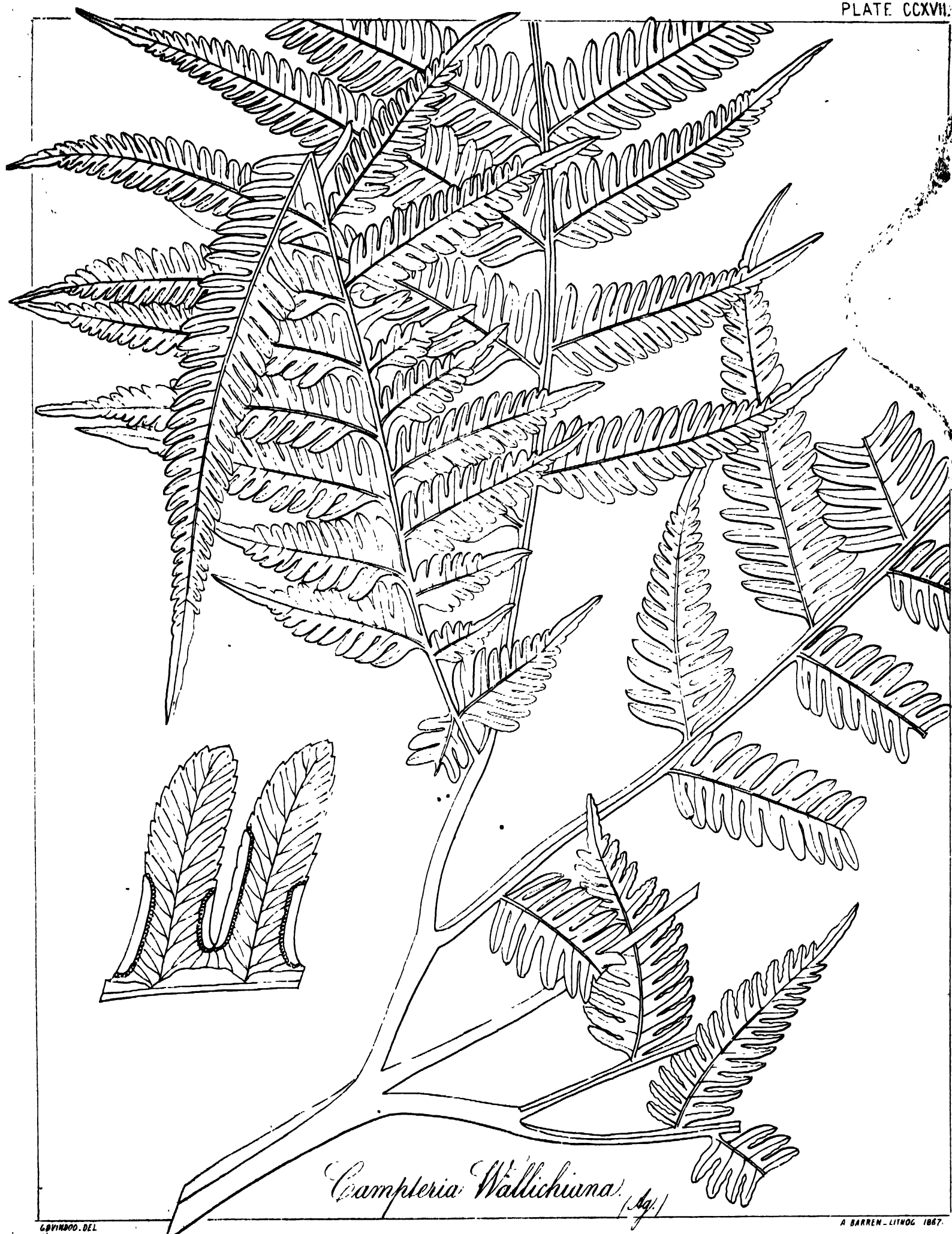


CAMPTERIA.

CAMPTERIA WALLICHIANA. (Ag.) Vide Pl. XXV.

I have recently received fine specimens of this fern from Col. Dyas, collected near Nynce Tal, and as my former plate only gives a portion of one of the pinnæ and that of an abnormal form, as many of the pinnules are pinnatifid, which is unusual. I now give a plate showing the habit of the specimen which is 3-branched, each lateral branch being again 3-partite, the veins in the sterile portions do not touch the margin, but terminate in a thickened dot just within it.

PLATE No. CCXVII.



Campteria Wallichiana. Ag.

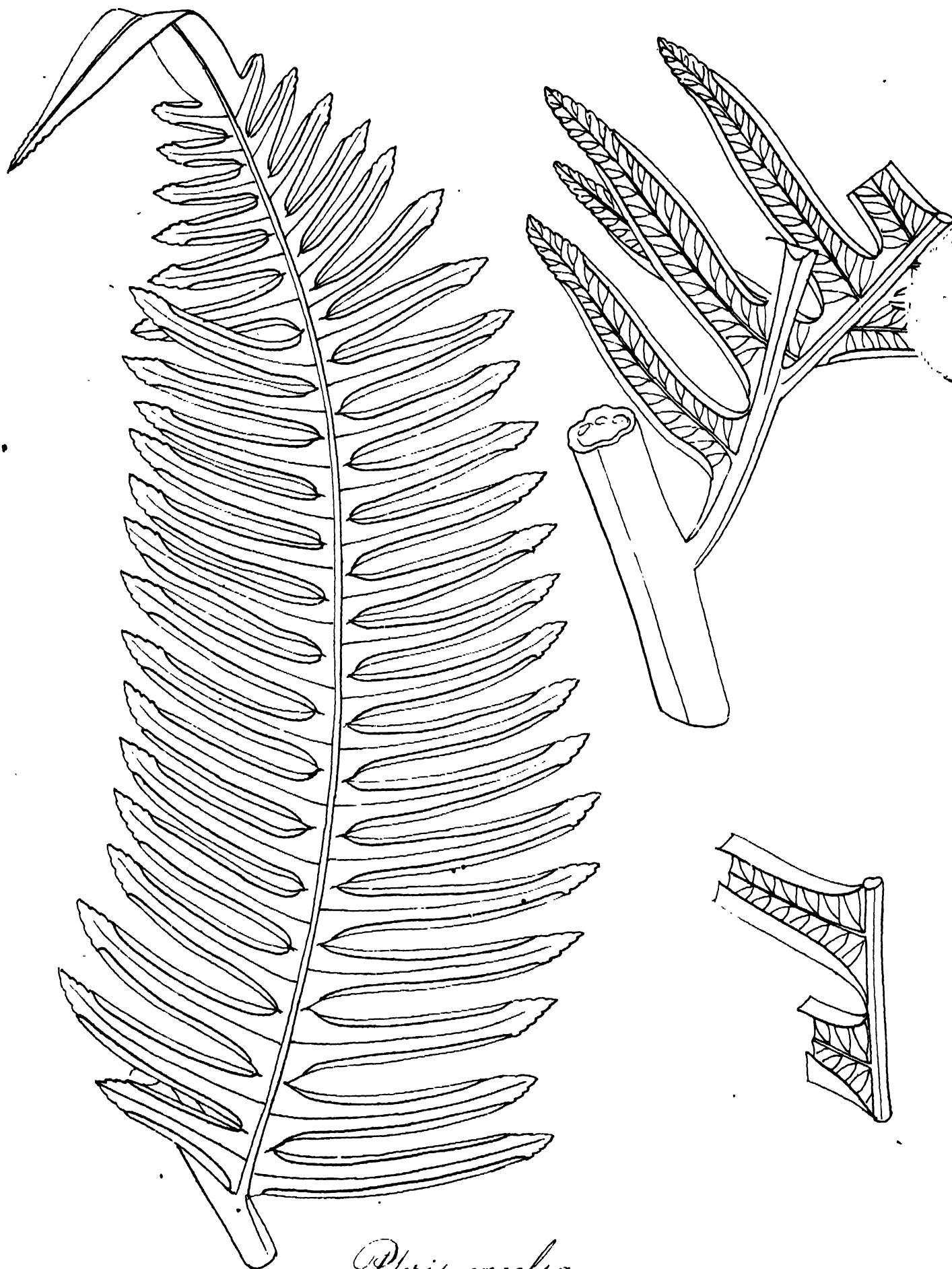
PTERIS.

PTERIS EXCELSA. (Gaud.) Frond ample 5-6 feet long submembranaceous, light green pinnate, pinnæ large remote 6 inches to a foot long, numerous, ovato-lanceolate caudate sessile, lower ones long-petiolate, lowest pair of pinnæ bipartite all deeply pinnatifid, nearly to the costa, segments (2-4 inches long) from a broad base linear-lanceolate obtuse serrated subfalcate, lower base decurrent, veins free forked at or near the middle, involucre continuous from the base almost to the apex rather broad, stipes very stout and flexuose, rachises bright castaneous glossy. *Hook. Sp. Fil.* ii. 183. *Gaud. in Freyc. Voy. Bot.* p. 388. *Ag. Sp. Gen. Pterid.* p. 21. *Brackenr. Fil. of the U. S. Expl. Exp.* p. 115;—Pt. terminalis, *Wall. Cat.* n. 101. *Ag. Sp. Gen. Pterid.* p. 20. *Bracken. Fil. of the U. S. Expl. Exp.* p. 115;—Pt. firma, *Wall. Cat.* n. 100 (segments $\frac{1}{2}$ an inch broad.)

The plate is taken from Sir W. Hooker's Sp. Fil. *I have lately received 2 fine fronds from Col. Dyas, collected near Nynee Tal, but the lowest pair of pinnæ is not bi-partite in either of them.*

Hab. Nepal, Silhet, Simla, Gurhwal, Kumaon, Nyee Tal, Mountains of Ava, Mountains near Banos, Luzon, Sandwich Islands.

PLATE No. CCXVIII.



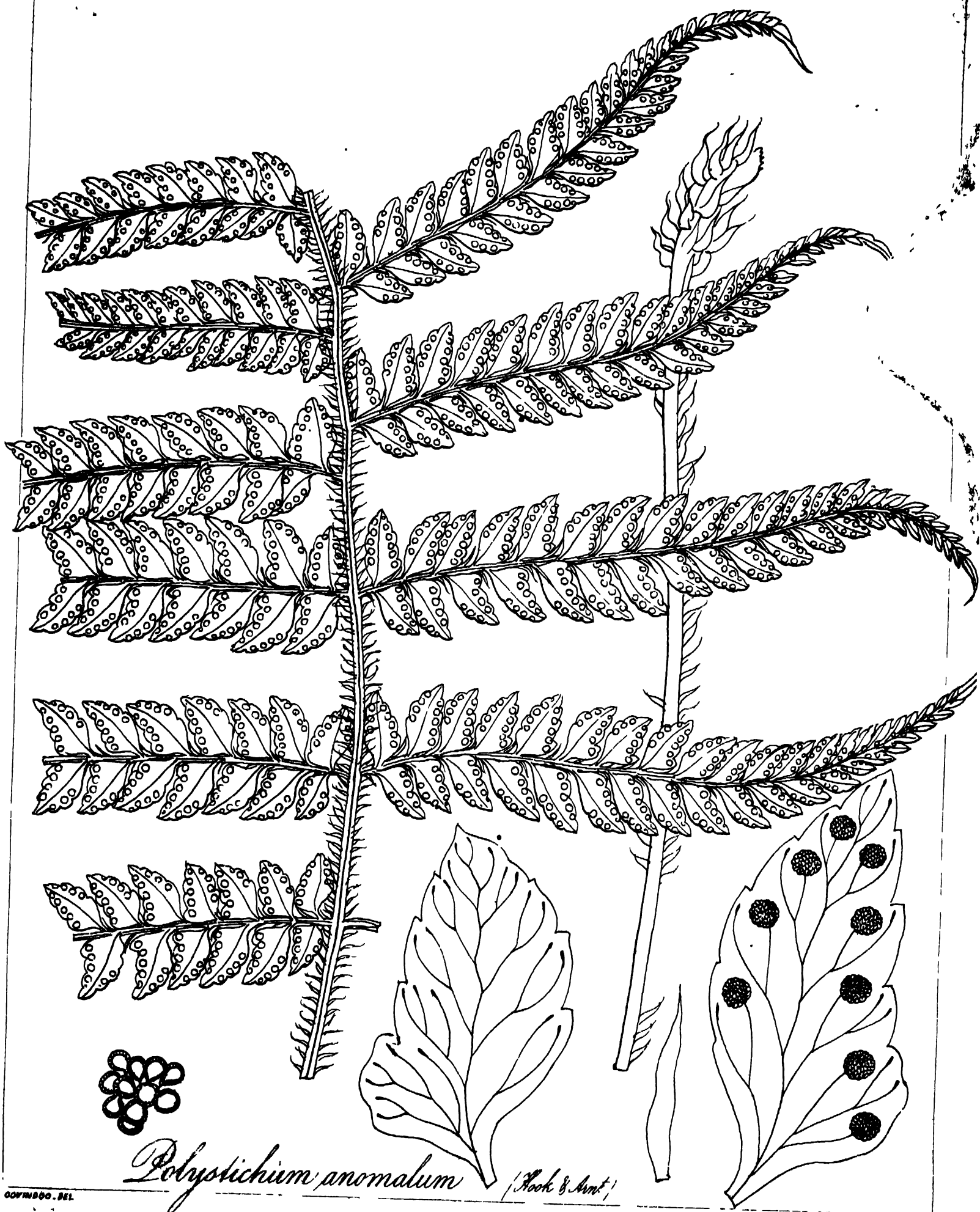
Pteris excelsa.
Laud.

POLYSTICHUM.

POLYSTICHUM ANOMALUM. (Hook. and Arn.) Caudex erect? stipites tufted—1-2 feet long, stout at the base, densely paleaceous with very narrow long flexuose ciliated scales (the lowest ones) and very large ciliated lanceolate thin broad-lanceolate ones almost an inch long, the latter kind (but smaller) continue upwards upon the stipes and main rachis and are deciduous, fronds ample $1\frac{1}{2}$ foot and more long, subcoriaceous, ovato-lanceolate bi-rarely below tripinnate, primary pinnæ 6-8 inches long lanceolato-acuminate, pinnales shortly petiolate, subfalcate obliquely ovate or ovato-lanceolate acute lobato-pinnatifid coarsely serrated towards the apex rarely obtuse or mucronate, superior truncated base auriculate, sori biseriate terminal on the veinlets *usually on the superior face!* involucre when present orbicular peltate very frequently wanting. *Hook. Sp. Fil.* iv, 27 ;—*Polypodium anomalum*, *Hook. and Arn. M. S. S.*, *Hook. in Kew. Gard. Misc.* viii. p. 360. t. ii. *Metten. Aspid.* p. 12 ;—*Polystichum anomalum*, *Thwaites*.

The specimen figured is from Ceylon—(alt. 5-6,000 ft.) *except in the extraordinary fact of its bearing its sori on the upper side of the frond, it hardly differs from some forms of the very variable Polystichum aculeatum, and is probably an abnormal form of that species.*

PLATE No. CCXIX,



Polystichum anomalum

Hook & Arn.

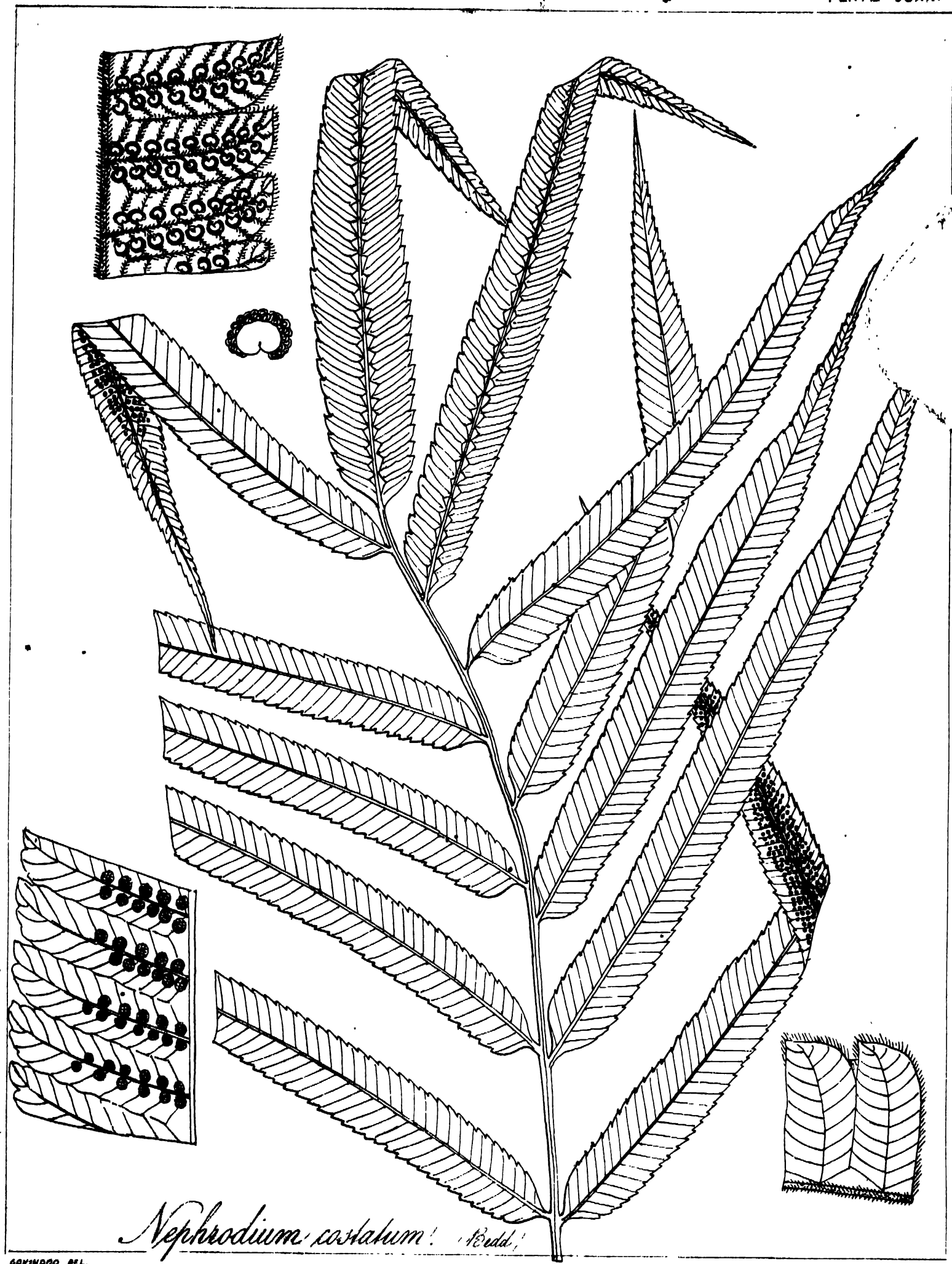
NEPHRODIUM.

NEPHRODIUM COSTATUM. (Bedd.) Caudex ? stipes $1\frac{1}{2}$ foot and more long, rather stout scaleless glossy and as well as the rachis strongly tinged with red (rarely stramineous) fronds 1-3 feet long broad-oblong or lanceolate coriaceous-submembranaceous pinnated glabrous, pinnae numerous rather distant patent sessile 5-8 inches long, $\frac{1}{2}$ an inch or a little more broad (on sterile fronds sometimes exceeding an inch) from an obliquely cuneato-truncate sessile base (lower ones rather more attenuated and subpetiolate) lanceolate or elongato-oblong, finely acuminate at the apex, the margin coarsely and sharply submucronato-serrated, serratures pointing a little forward uniform, costae prominent beneath of the same color as the rachis and stipes generally reddish, veinlets about 6-8 pairs, of which all are connivent except 2-3 short pairs in the teeth of the serratures, sori in 2 series generally at the base of the veins close to the costules but sometimes near the centre of the veins, involucre reniform very fugacious and only to be detected on very young fronds :—*Polypodium costatum* (Wall. Herb.) not Brack. P. (*Goniopteris*) *lineatum* Coleb. in Herb. Wall. and Wall. Cat. 300. Hook. Sp. Fil. v. 12.

The specimens figured are from Gurlwal, Himalayas (Dr. Stewart).

In some very young fronds forwarded by Dr. Stewart, an involucre is distinctly visible. Mr. Thwaites, the Director of the Peradenia Gardens in Ceylon, informs me that my specimens exactly correspond with authentic specimens in his Herbarium of Dr. Wallich's *Polypodium costatum* from Nepal, so that there can be no doubt that this is Wallich's plant, and in now referring it to *Nephrodium*, I retain Wallich's specific name, as there is already a *Nephrodium lineatum*.

The fern figured at Pl. iii. of this work is incorrectly named *Goniopteris lineata* (Coleb.), it is referred by Sir Will. Hooker to *Goniopteris urophylla* (Wall.), a Ceylon specimen of which is figured at Pl. cccxxix. of "the Ferns of S. India." I cannot however satisfy myself that the Birmah plant has anything to do with the Ceylon one; it is of quite a different texture, is sharply serrated which the Ceylon plant never is, and has much more prominent venation, it is very common in Birmah, and Mr. Parish has lately detected involucre in very young specimens, so that it is not a *Goniopteris*, but a *Nephrodium*, and I now propose the name *Nephrodium Moulmainense* for the Birmah species and all the localities except Birmah should be omitted at page 3. If the Ceylon fern (Pl. cccxxix. Ferns of S. India) is found to have involucre it cannot be separated from *Nephrodium lineatum*, Presl. (Pl. cxxxiii. of this work.) My Ceylon specimens of *Goniopteris urophylla* (though young and good) show no trace of an involucre, but it is very distinctly visible in my Himalayan specimen of *Nephrodium lineatum*, there is nothing else to distinguish the two ferns (vide remarks at p. 133.)



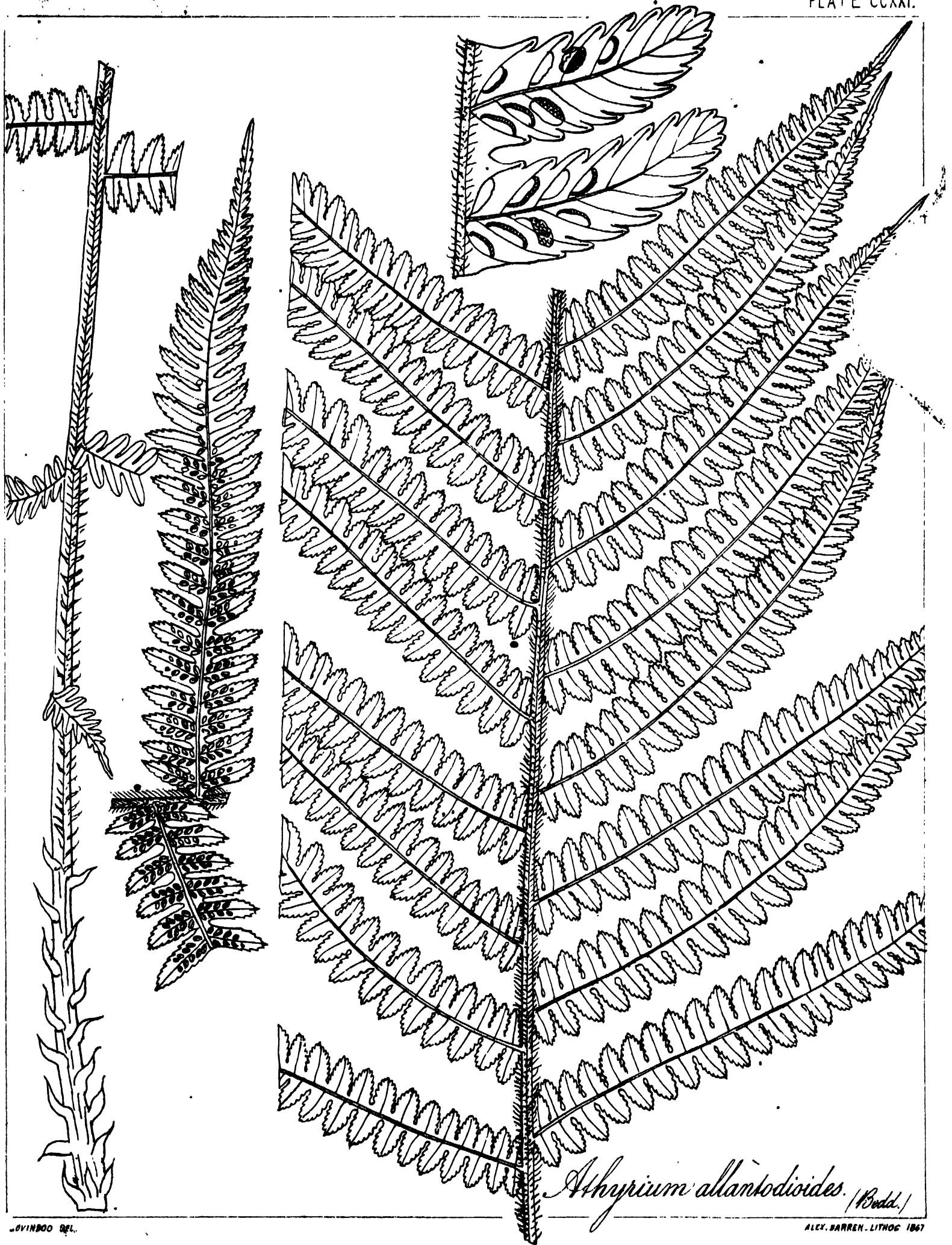
Nephrodium costatum! Bedd.

ATHYRIUM.

ATHYRIUM ALLANTODIODES. (Bedd.) Caudex? stipes 5-7 inches and more long, slightly hairy furnished with large chaffy scales near the base, fronds up to 3 feet long and 8 to 9 inches broad glabrous, except on the rachis and costa beneath which are both more or less villous with weak scale-like hairs, oblongo-lanceolate pinnae alternate sessile, linear lanceolate acuminate, in the middle of the frond about 5 inches long by $\frac{3}{4}$ of an inch broad, lowest ones remote and gradually dwarfed, superior ones gradually decreasing in size, all pinnatifid nearly to the costa, segments oblongo-lanceolate to linear lanceolate obtuse or acute $\frac{1}{3}$ rd to $\frac{1}{2}$ an inch long, very regularly serrated, serratures obtuse or acute, more or less falcate, veins pinnate simple not forked, one to each serrature not quite reaching the margin, the lowest pair terminating well above the sinus, sori terete bullate sometimes slightly lunate or athyroid bursting regularly at the side one on each of the 4 or 5 lower veins.

The specimens figured are from Dalhousie, (Col. Dias).

PLATE No. CCXXI.



Adiantum allantodioides. (Bodd.)

CHEILANTHES.

CHEILANTHES NITIDULA. (Wall.) Caudex short creeping stout, stipites 2-5 inches long very numerous and crowded, hispid with subulate deciduous chaffy dark-brown scales, and as well as the rachis (which is downy on one side) ebeneous, frond 3-4 or rarely, 5 inches long subdeltoideo-oblong acuminate (sterile ones broader), coriaceo-membranaceous pale, green glabrous, pinnato-pinnatifid below sub-bipinnate, pinnæ approximate nearly opposite broad-lanceolate dimidiate (the inferior half being broadest), deeply pinnatifid nearly to the rachis, lowest pair again subpinnate and the secondary pinnæ pinnatifid, lobes all oblong entire or sinuate gradually coming to a sharp point, the lower base decurrent, the lowest inferior lobes the longest; involucres subintramarginal continuous rarely here and there interrupted, broad flat membranaceous brown close-pressed frequently lobed and crenated and transversely wrinkled. *Hook. Sp. Fil.* ii. 112. *Hook. Jc. Pl. X. ined*;—*Pteris nitidula Wall. Cat. n. 89*;—*Allosorus nitidulus, Presl.*

The specimen figured is from the Himalayas, (Dr. Stewart).

Hab. Kumaon, Simla, Pundkester.

PLATE No. CCXXII.



Cheilanthes nuttallii Nutt.

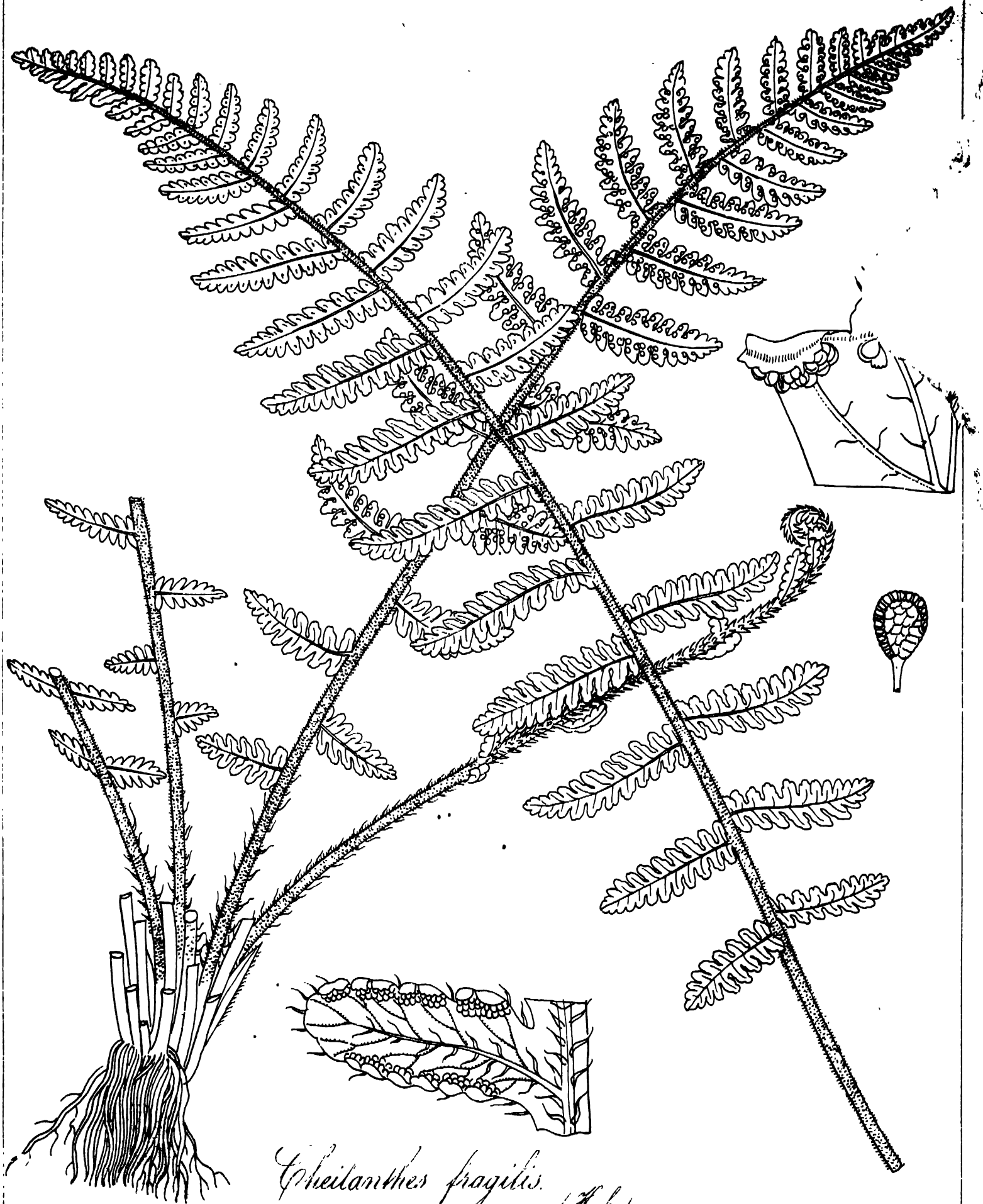
CHEILANTHES.

CHEILANTHES FRAGILIS. (Hook.) Caudex none except the copious tufted wiry fibres, from which the stipites arise in tufts, main rachis and slightly scaly stipes (3-5 inch long) clothed with a greyish glandulose tomentum, fronds of an opaque brownish green color, submembranaceous, 8-15 inches long, erect, rather stiff but fragile, oblongo-lanceolate, pinnate with the pinnæ pinnatifid, pinnæ alternate distant horizontal up to 2 inches long, pinnatifid nearly to the rachis (which is furnished with subulate scales), segments crenated, lobes obtuse and partially ciliated at the margin, veins pinnated simple or forked, sori approximate roundish, involucre ciliated formed of the slightly changed lobes of the margin.

The figure is taken from Sir W. Hooker's *Icones Filicum*,

Hab. Moulmein, Limestone Rocks.

PLATE No. CCXXIII.



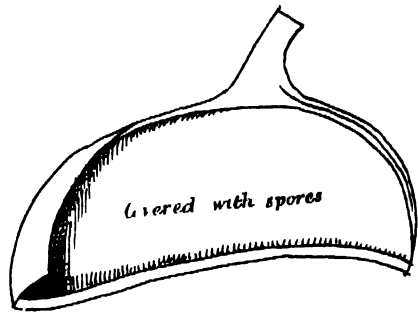
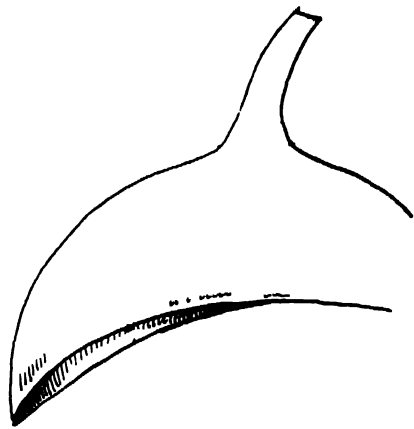
Cheilanthes fragilis. (Rock-fern.)

PLATYCERIUM.

PLATYCERIUM BIFORME. (Bl.)

The figure is taken from a drawing (on a very reduced scale) made by the Rev. C. S. Parish from a living specimen of this magnificent fern. Plate No. CIX of this work is a figure of a portion of a fertile frond (natural size), shewing the venation. Mr. Parish informs me that the sori cover the whole concavity of a half cup-like coriaceous pedicelled receptacle, my former figure gives the idea of the receptacle being as flat as the rest of the frond, but a further examination proves that this receptacle is burst along its margins and must have been concave, but it could not have been such a perfect half cup as represented in the present drawing, but the receptacles probably differ much according to age, the younger ones being more cup-shaped. Sir W. Hooker describes the fertile segment as a reniform stipitate shield-like receptacle, but does not mention its being concave, and it probably appears quite flat in all herbarium specimens.

PLATE No. CCXXIV.



Platycerium bifurc 1811

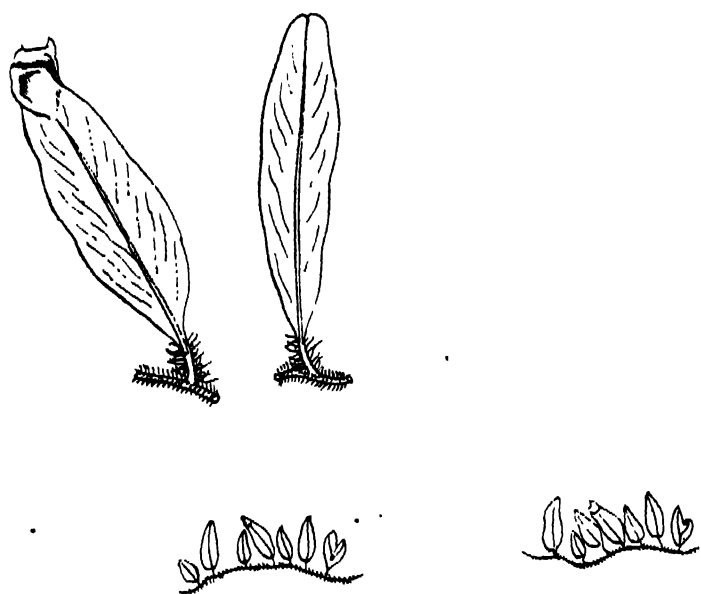
HYMENOPHYLLUM.

HYMENOPHYLLUM PARVIFOLIUM. (Baker). Rhizome slender, wide-creeping tomentose. Frond two to three lines long by a line broad, linear-oblong, undivided, or once or twice cleft at the apex, sometimes slightly, sometimes nearly half way down, with a central costa only, which runs down the centre of each lobe when the frond is divided; lateral veins none, but marked with faint irregular free spurious venules; the margin slightly undulated, glabrous; the sorus solitary, terminal; the involucre globose-triangular, narrowed into the costa, about as deep as the convex broadly rounded valves.

The figure is taken from Mr. Baker's plate in the *Linnaean Journal*.

Hab. Moulmein.

PLATE No. CCXXV.



Hymenophyllum parvifolium
/ Baker

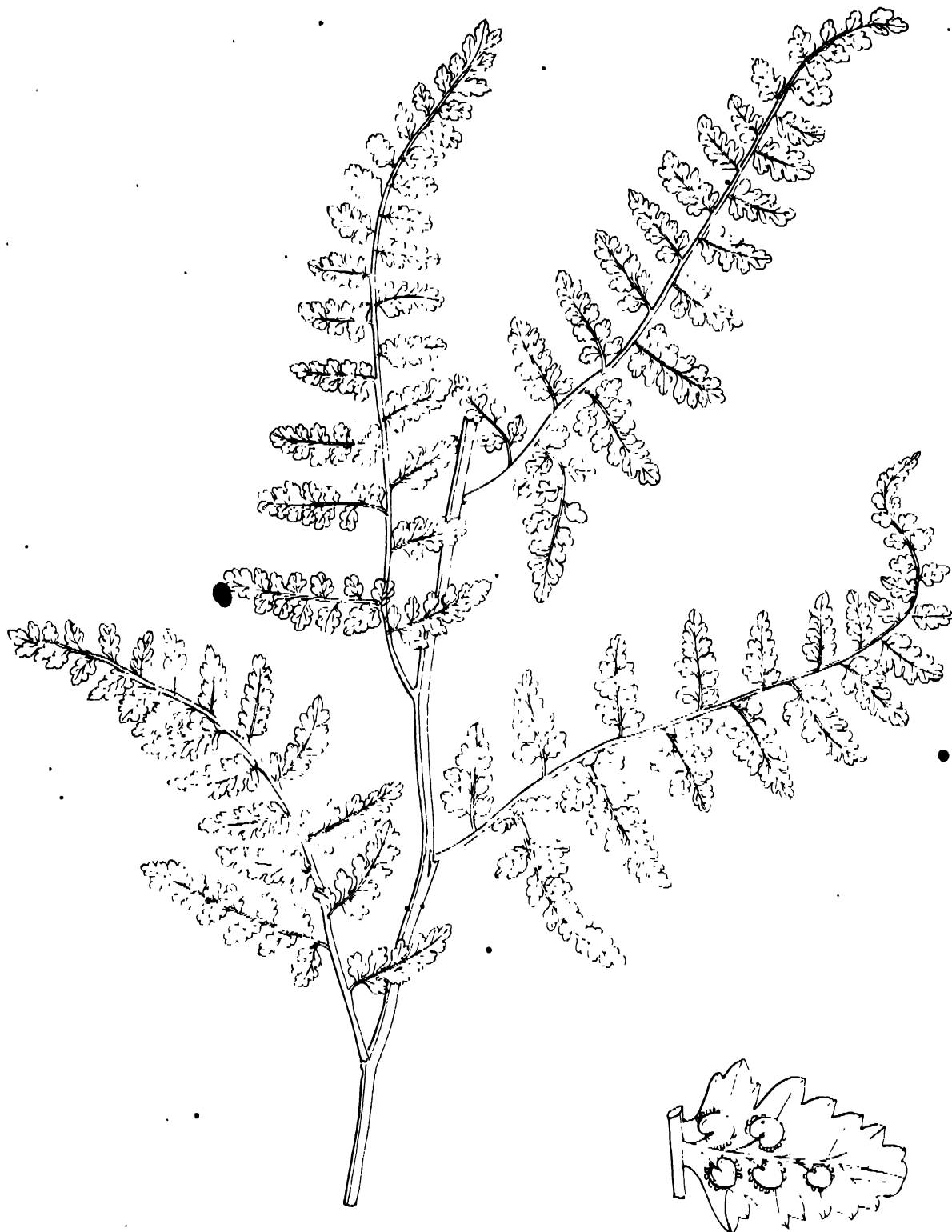
LASTREA.

LASTREA ANGUSTIFRONS. (Moore M. S.) Rhizome wide creeping, stem 1-2 feet long, ebenous, deciduously scaly, frond 2 feet long, 6-8 inch wide, tripinnatifid, pinnæ distant, erecto-patent lanceolate flexuose, 4-6 inch long, 2 inch broad, pinnules distant, lanceolate, the lower ones cut down to the rachis into subquadrangular deeply-toothed lobes $\frac{1}{8}$ th inch broad, texture subcoriaceous, rachises and both surfaces naked, veinlets of the lobes forked, sori in rows close to the midrib of the pinnules. *Lastrea splendens* var. *β. angustifrons.* *Hook. Sp. Fil.* iv. 126, and page 42 of this work.

The specimen figured is from Nepaul—(Wallich).

Hab. Nepaul.

PLATE No. CCXXVI.



Lactuca angustifrons.

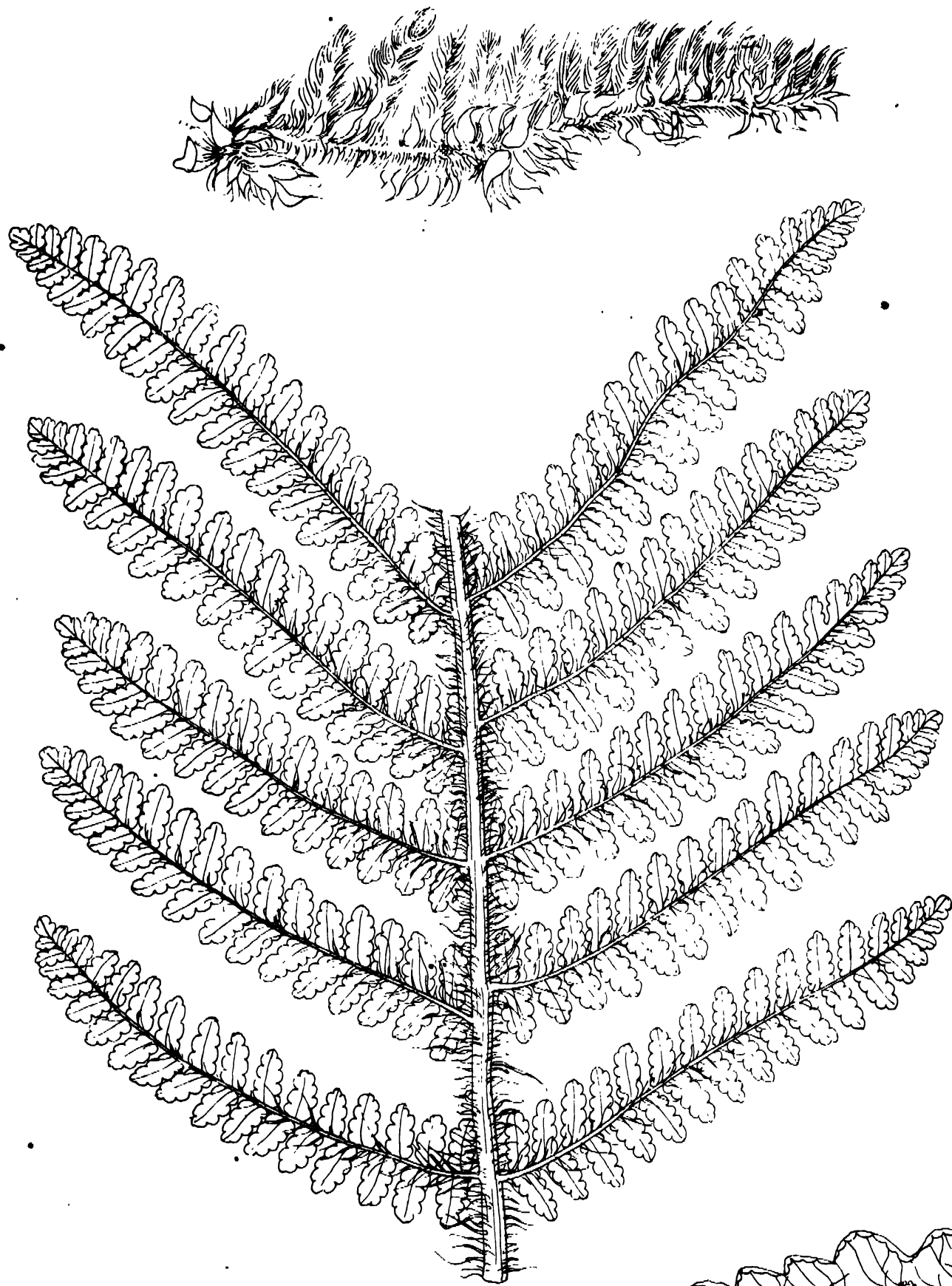
LASTREA.

LASTREA BARBIGERA. (Hook.) Caudex stout erect short and together with the young nascent fronds clothed with a dense mass of very large satiny scales mixed with soft golden and silky hairs, stipites a span to a foot long, stout black brown only at the base (the rest and the rachises) clothed with large satiny scales ovate and acuminate mixed with narrower ones, those upwards gradually pass into rich golden soft hair-like and flexuose scales, fronds $1\frac{1}{2}$ -2 feet long, 10 inches to a foot wide, broad ovate-oblong scarcely acuminate pinnate or almost universally bipinnate, primary pinnæ subpetiolate oblong obtuse 4-5 inches long, $1\frac{1}{2}$ inch broad, pinnules sessile oblong deeply pinnatifid, lobules strongly dentate, the teeth divaricating with a very sharply-acuminated and setaceous point, veinlets forked, sori mostly on the upper half of the frond as many as there are lobules to the pinnule. Hook. Sp. Fil. iv. 113—Nearly allied to *L. Brunoniana*.

The specimen figured is from Sikkim, 12000 ft.—(Dr. Hooker).

Hab. Kumaon, Simla, Sikkim 12-13000 ft.

PLATE No. CCXXVII.



Lasia barbigera Hook.

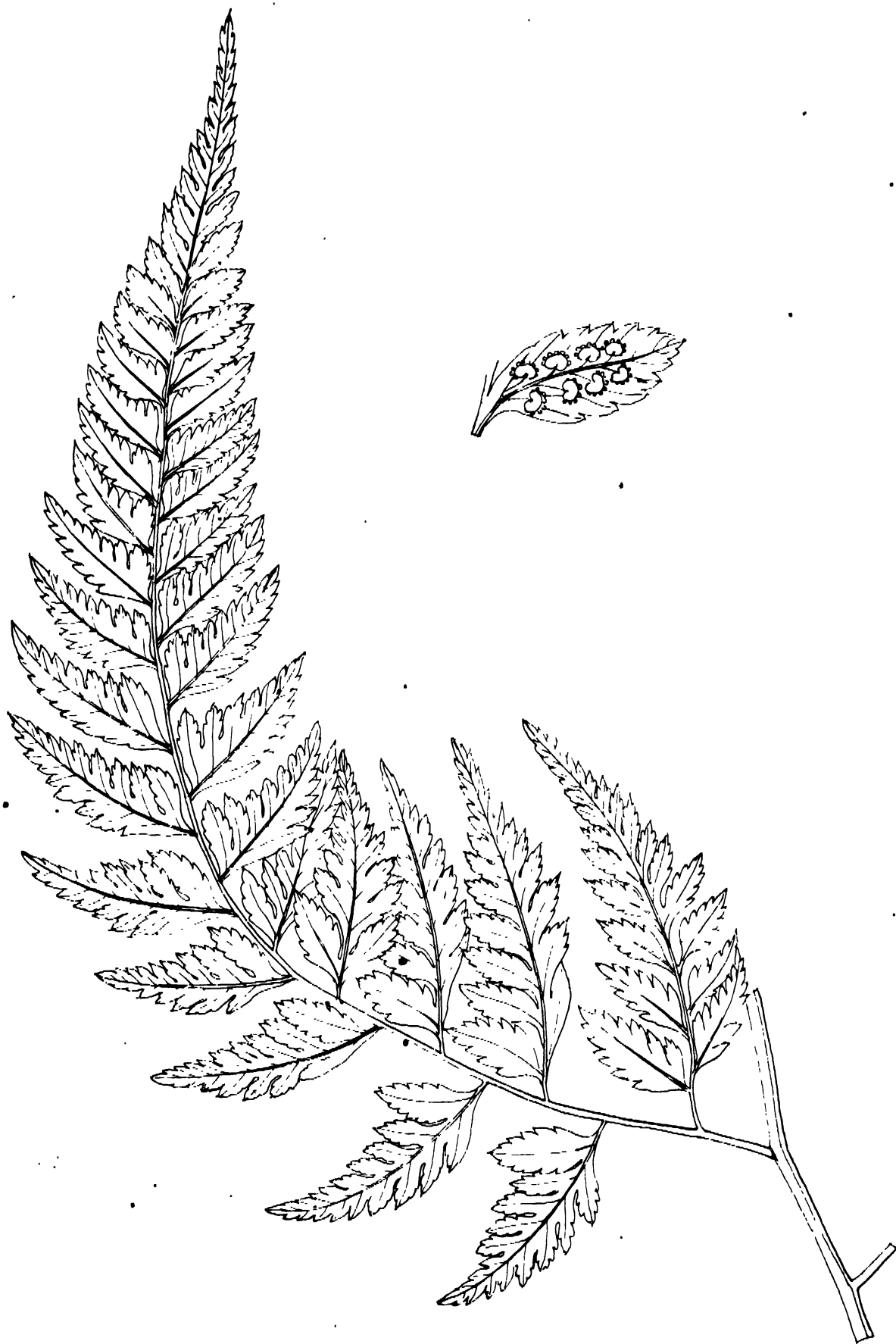
LASTREA.

LASTREA PLATYPUS. (Hook.) Caudex ? stipes in the upper part terete testaceous glabrous slender, frond $1\frac{1}{2}$ foot long, thin coriaceous glossy sub-deltoido-ovate acuminate bipinnate tripinnate below, primary pinnæ 6-10 inches long petiolate, superior ones ovato-oblong acuminate subfalcate ; based ones the longest and bipinnate, pinnæ and ultimate pinnules all obliquely ovate acuminate at the base, superior base auricled, the rest sub-pinnatifid with pungent and serrated lobes, veinlets twice or thrice forked, sori in 2 series half-way between the costule and the margin, involucre large convex cordato-reniform membranaceous finely fimbriated on a short stipes.—*Hook. Sp. Fil.* iv. 149 ;—*Aspidium* ;—*Kze. Bot. Zeit.* vi. p. 262 ;—*Mett. Asp.* p. 69.

The specimen figured is from Moulmein—(Lobb.)

Hab. Moulmein Mountains, 5000 ft., Java.

PLATE No. CCXXVIII.



Lastrea platypus Hook.

POLYPODIUM.

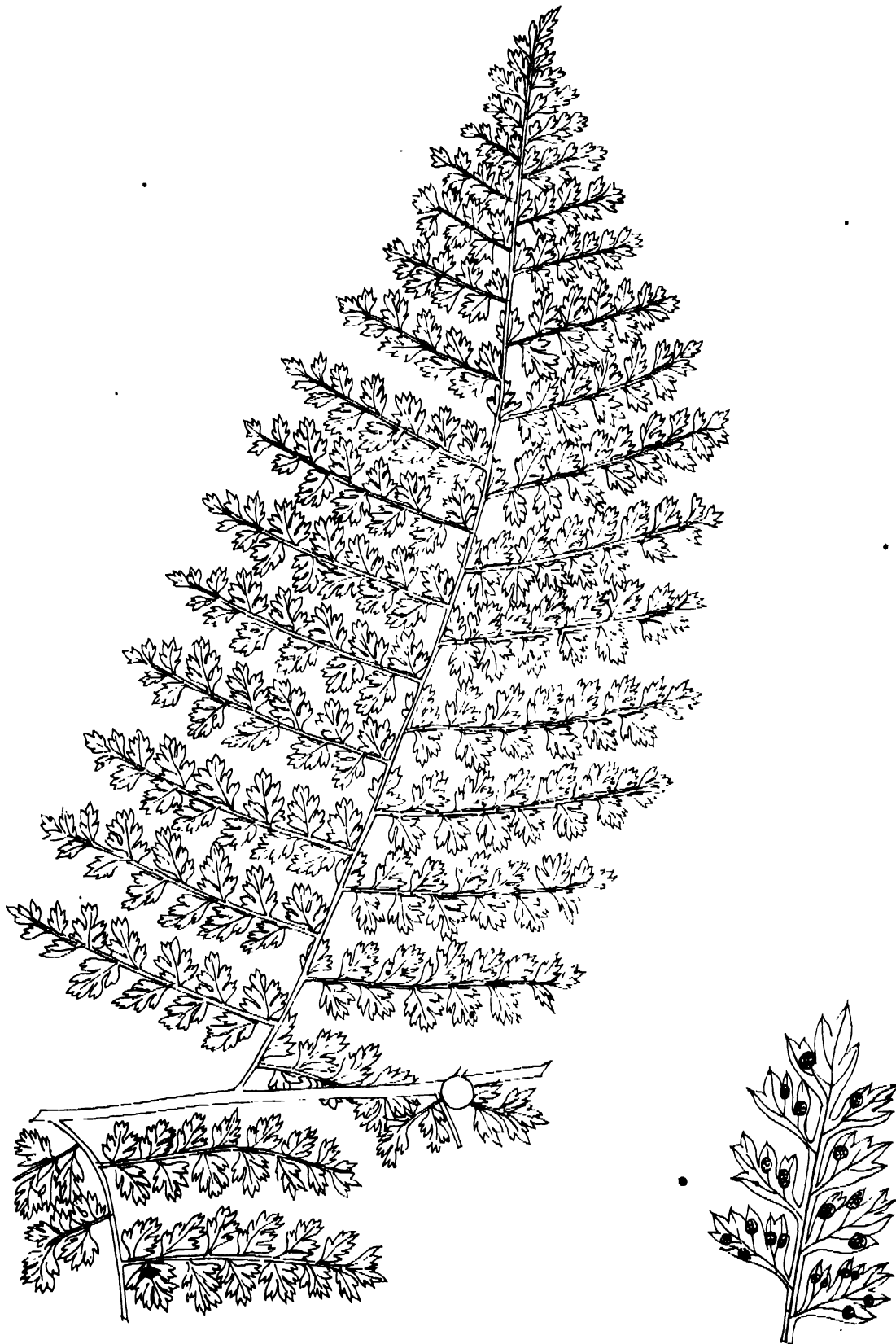
POLYPODIUM SUBDIGITATUM. (Bl.) Caudex slender, suberect flexuose scaleless, radicant with wiry fibres, terminated by a tuft of scaly stramineous stipites a span to a foot and more high, fronds 1-2 feet high, ovate acuminate firm membranaceous quadri-pinnate, primary secondary and tertiary pinnæ petiolate, ultimate ones ovate cuneate and subpetiolulate at the base, about $\frac{1}{2}$ of an inch long, pinnatifid with few oblongo-obovate, obtuse segments, pinnate at the base, the ultimate pinnae broader than the segments and lobed, veins and simple or forked veinlets subflexuose terminating below the apex of a lobe and there bearing the rather small globose sorus ;—*Hook. Sp. Fil.* iv. 256 ;—*Bl. Fil. Jav.* p. 196. t. 93 ;—*Polypodium davallioides.* *Mett. Polyp.* p. 32 ;—*Hook. Sp. Fil.* iv. 256 ; *Monachosorum* ;—*Kze. in Schk. Fil. Suppl.* ii. p. 1. t. 101 ;—*Polypodium conifolium.* *Wall. Cat. n.* 326.

There are clusters of tuberiform excrescences in the axils of the pinnæ, which Sir W. Hooker considers may be gemmæ or viviparous buds, or possibly fungi.

The specimen figured (a lower pinna) is from Sikkim—(Dr. Hooker.)

Hab. Nepal, Sikkim 7—8000 ft., Bhotan, Malay Islands, 3—7000 ft., Java, Malay Penins.

PLATE No. CCXXIX.



Polypodium subdigitatum Bl.

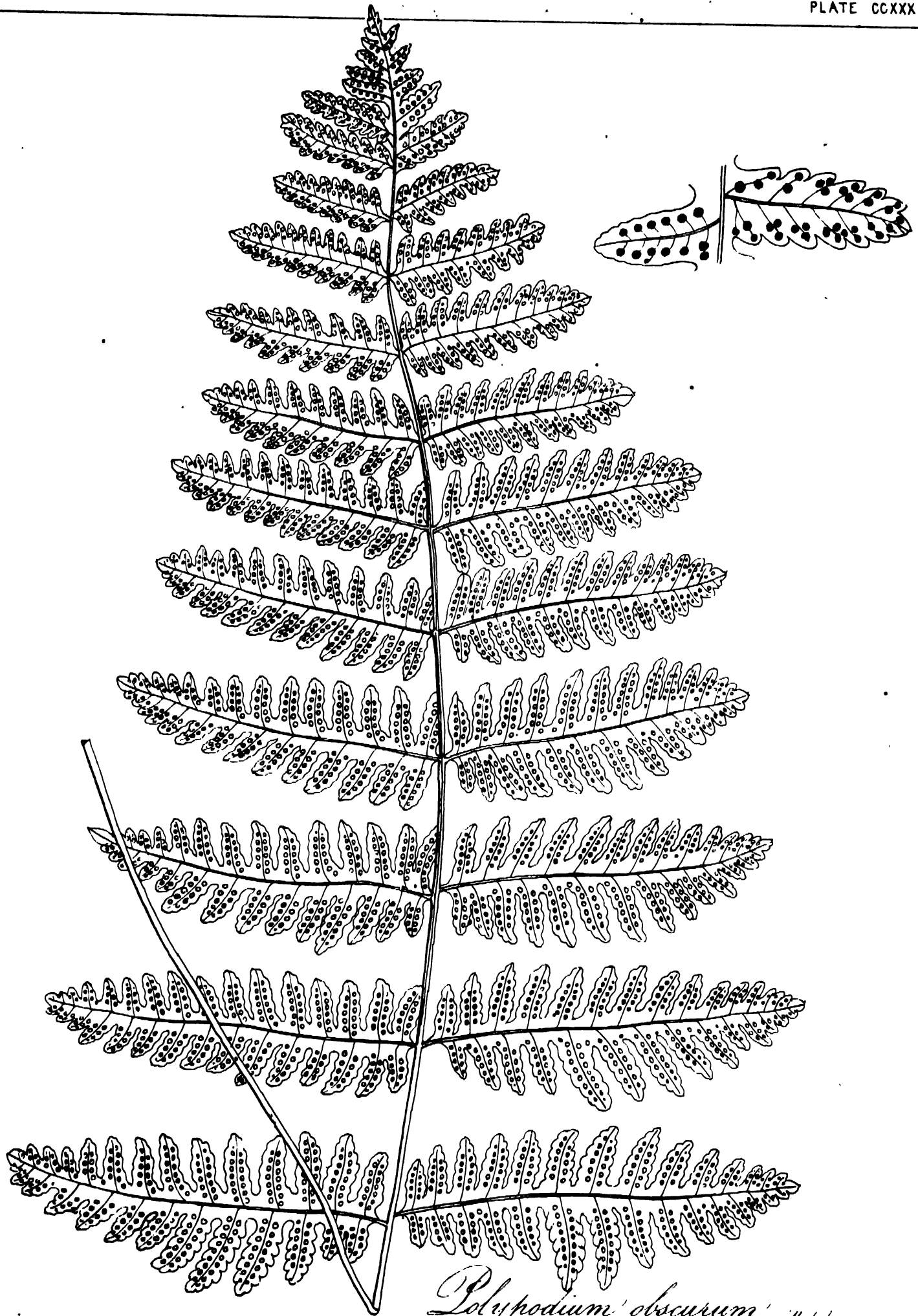
POLYPODIUM.

POLYPODIUM OBSCURUM. (Hook.) Caudex? stipes and rachis intensely ebenous-black polished glandularly pubescent, fronds 1-1½ foot long, 6-10 inches broad, submembranaceous ovate acuminate pinnate pinnatifid at the apex, pinnæ rather wide apart horizontally patent 4-5 inches long, ¾ (in the fertile frond), 1 inch (in the sterile) broad, oblong-lanceolate acuminate somewhat contracted in the lower half of the sterile frond, uniformly and deeply pinnatifid to near the rachis in the fertile frond, less deeply above the middle in the sterile one where the pinnæ is broadest, segments oblong obtuse scarcely falcate entire or subserrate, the sinuses obtuse, veins free simple or forked, sori copious dorsal or sometimes terminal in 2 series intermediate between the costule and the margin, costæ and costules villosulous, very slender in the sterile plant, stouter in the fertile, the former black at the base beneath. *Hook. Sp. Fil.* iv. 287;—*Phegopteris* obscure *Fée. Gen. Fil.*;—*Stenosemia aurita.* *J. Sm. in Hook. Gen. Fil.* t. 94. f. f. 5 and 6 (only and as regards *Cuming's plant*, n. 302);—*Phegopteris Philippinensis* 2nd var. *Mett. Pheg.* p. 27.

The specimen figured is from Tavoy—(Parish)—in outline it is very similar to *Lastrea melanopus* (Pl. 38 of this work)

Hab. Tavoy, Leyti, Philippine Islands.

PLATE No. CCXXX.



Polypodium obscurum (Hook.)

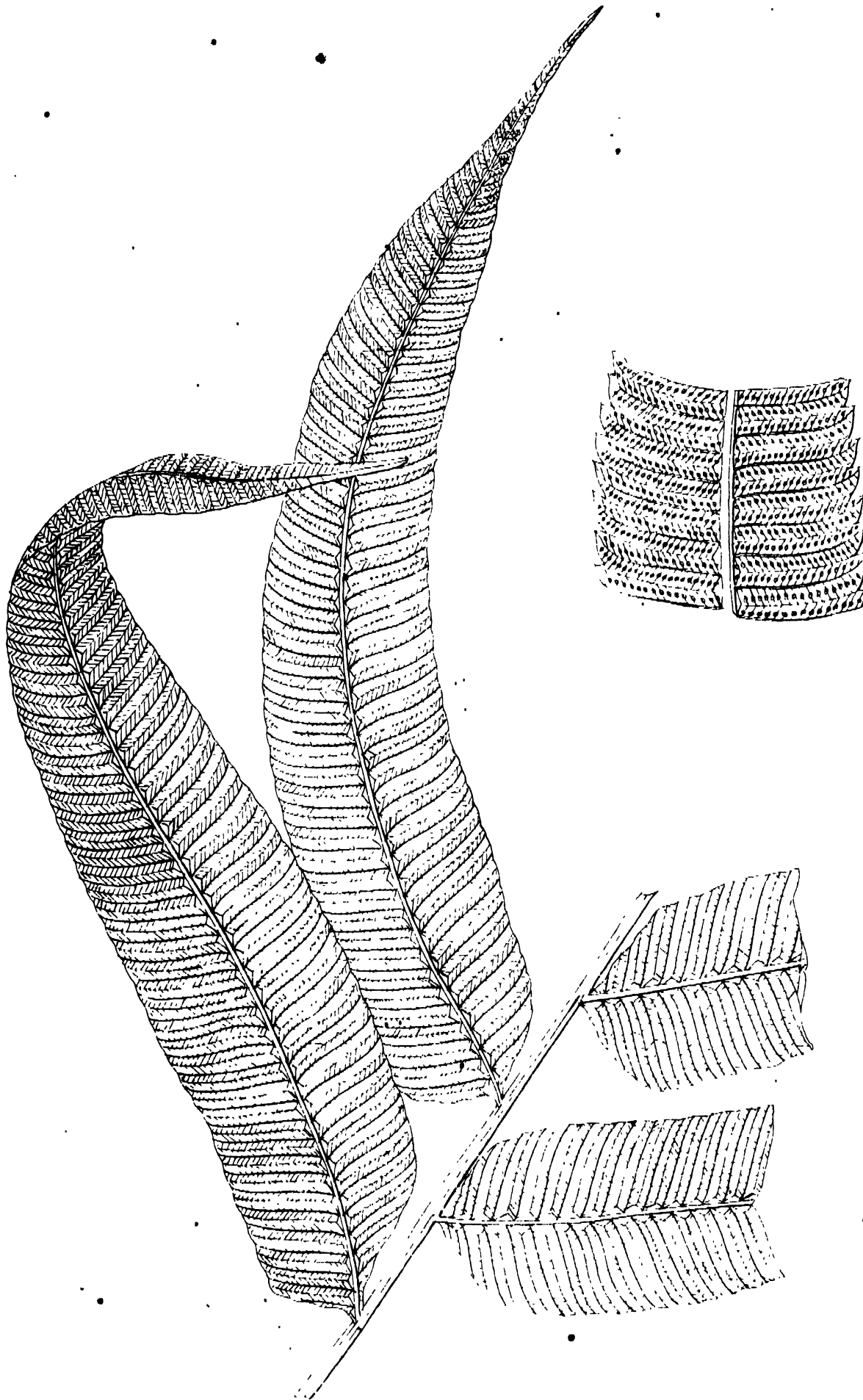
GONIOPTERIS.

GONIOPTERIS MULTILINEATA. (Wall.) Caudex ? stipes 2 feet and more long, stout glabrous as well as the rachis, frond about 3-4 feet long firm-coriaceous pale yellowish-green glabrous pinnated, pinnae approximate numerous 8-15 inches long, 1-2 inches wide, from a truncated sessile base, elongate moderately acuminate, the margin every where strongly and sharply serrated, costa and costules and even veinlets elevated on both sides especially beneath, veinlets 16-20 pairs close placed, nearly the whole of them connivent and soriferous in the middle and biserial. *Hook. Sp. Fil.* v. xl.—*Wallich. in Herb. Hook.*

The specimen figured is from Sylhet—(Wallich.)

Hab. Sylhet, Sikkim, Assam, Parasnath, Pandua, Bhotan, Gowhatty, Kumaon.

PLATE No. CCXXXI.



Goniopteris multilincosa Hall

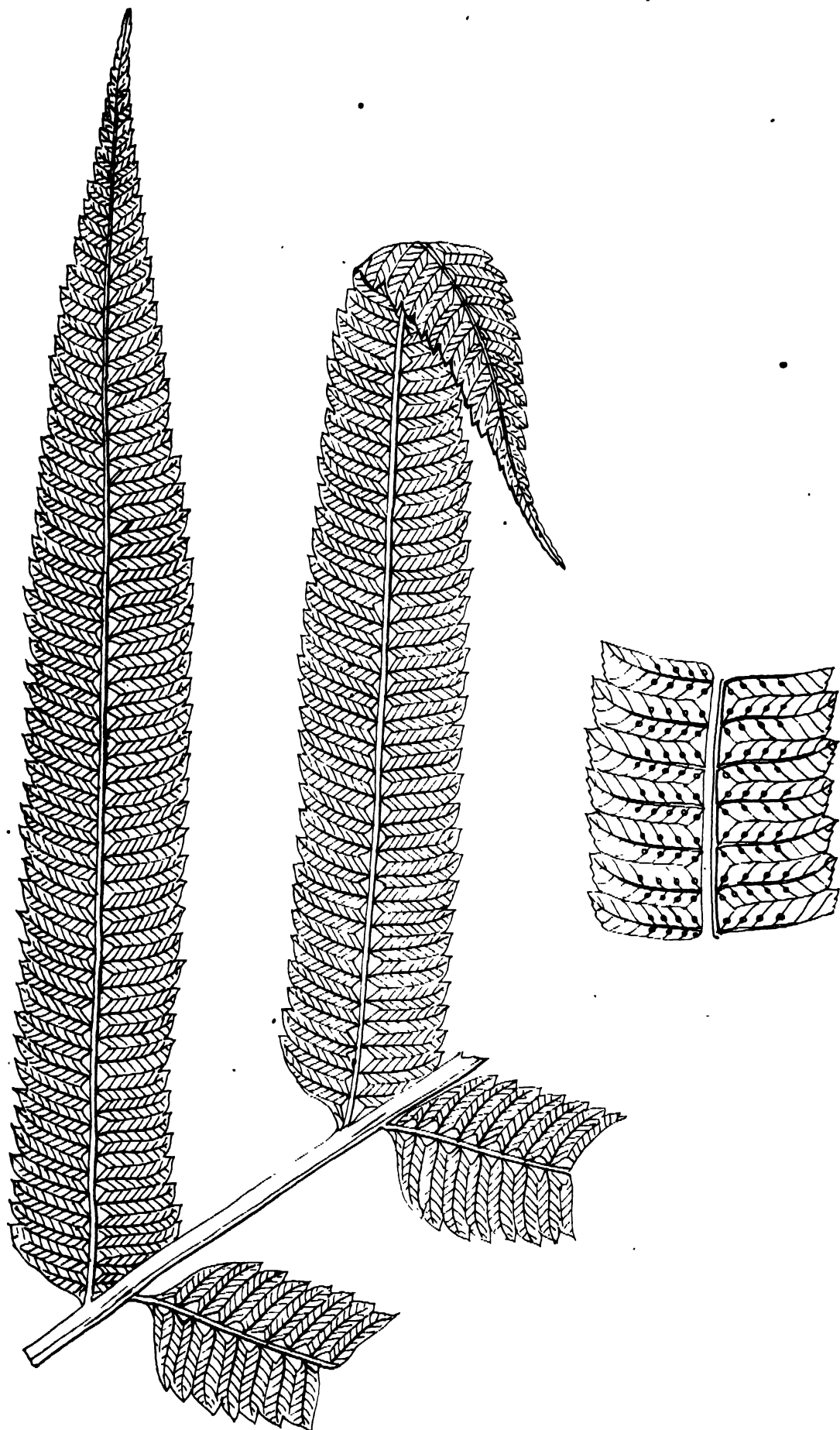
GONIOPTERIS.

GONIOPTERIS PENANGIANA. (Hook.) Caudex ? stipes and rachis moderately stout quite glabrous cinnamon-red, fronds ample membranaceous dark-green glabrous pinnated, pinnæ (8-10 pairs only of the base of the frond) 6-10 inches long, 1-1½ inch broad from a cuneate sub-attenuated sub-petioled base, elongato-oblong lanceolate finely acuminate coarsely and sharply sub-mucronately and sub-duplicato-serrated, serratures moderately patent uniform, veinlets 8-9, pairs very frequently alternate, spurious vein or costule slender, more or less flexuose, sori at the base of each veinlet forming 2 closely placed series only separated by the primary vein or costule. *Hook. Sp. Fil.* v. p. 13 ;—*Pol. urophyllum*, *Wall.* var. *angusta* ? *Pol. lineatum* ; *Wall. Cat. n.* 299. 3.

The specimen figured is from Penang—(Wallich.)

Hab. Penang.

PLATE No. CCXXXII.



Goniopteris Penangiana (Hook.)

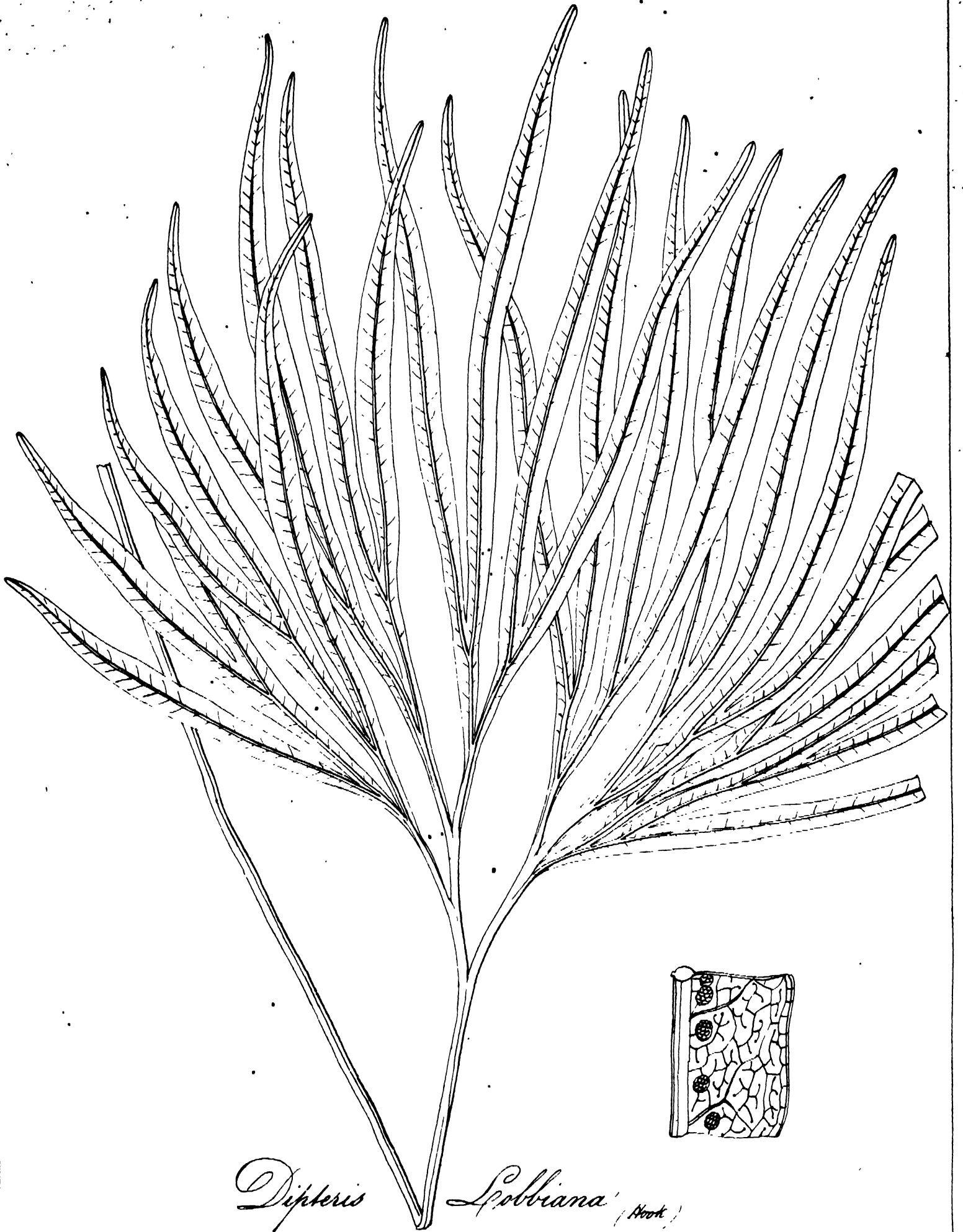
DIPTERIS.

DIPTERIS LOBBIANA. (Hook.) Caudex ? stipites 1 foot and more long, fronds coriaceous, 8-12 inches long, flabelliform glabrous, 3-4 times digitately dichotomous, dark brownish-green above, pale and tawny beneath, segments 4-8 inches long scarcely $\frac{1}{2}$ an inch wide, linear-sublanceolate finely acuminate costate entire, venation manifest, the costules form a costal series of large soriferous areoles, the rest of the veins unite, constituting lesser areoles and include free veinlets, sori 1-2 in each primary areole (sometimes confluent) in a single series very near the costa. *Hook. Sp. Fil.* v. 100 ;—*Hook. in Kew. Gard. Misc.* v. p. 300, t. xl ;—*Mett. Polyp.* p. 104.

The specimen figured is from Sarawak—(Lobb.)

Hab. Mount Ophir, Malacca, Sarawak, Borneo.

PLATE No. CCXXXIII.



Dipteris Lobbiana (Hook.)

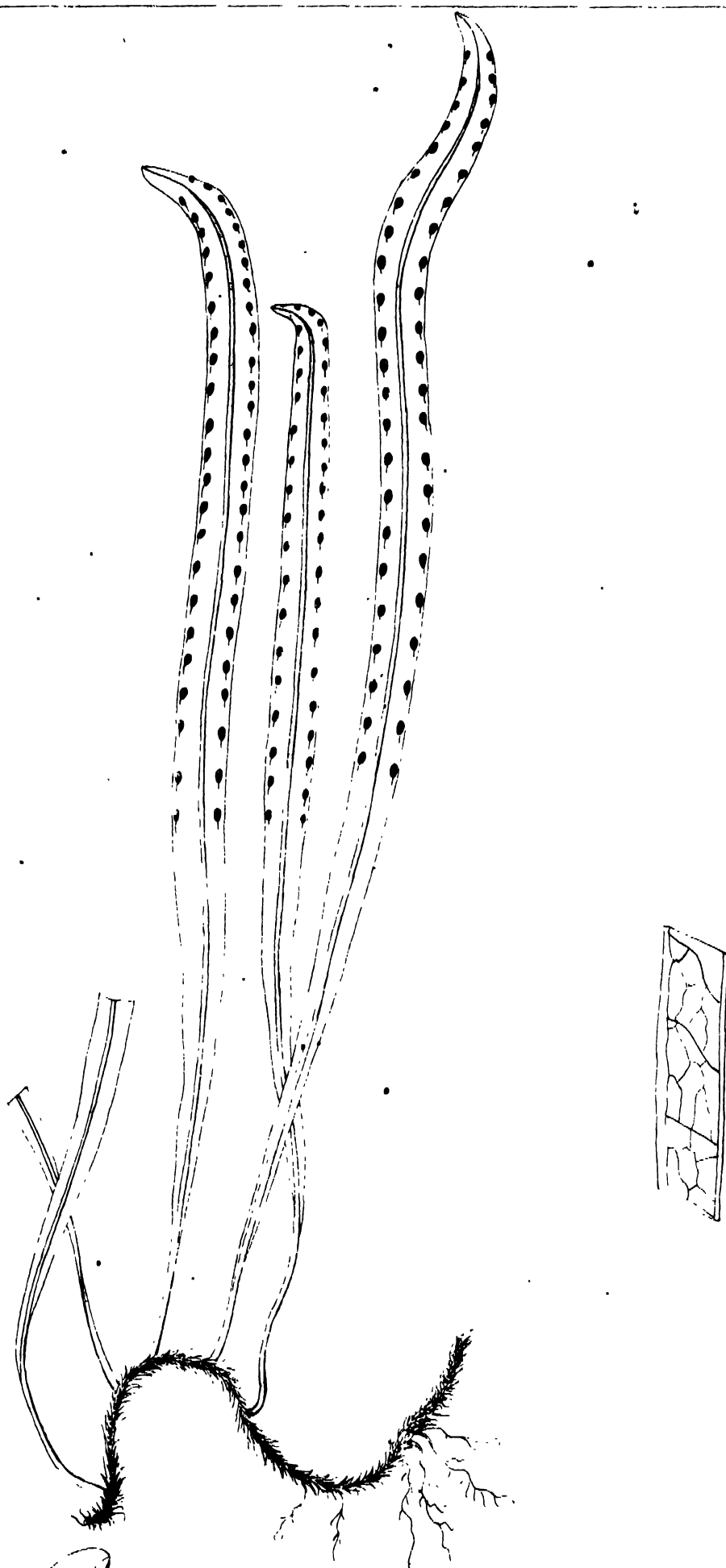
PLEOPELTIS.

PLEOPELTIS STENOPHYLLA. (Bl.) Caudex creeping paleaceous with glossy subulate pale imbricated ferruginous scales, stipites 1-2 inches long distant, fronds firm-coriaceous very rigid glabrous polished 4-5 inches long, $\frac{1}{4}$ - $\frac{1}{2}$ an inch wide linear-oblong obtuse, the margin thickened and subreflexed broadly crenato-sinuate rarely narrowing upwards, but much and gradually attenuated below on the stipes, costa prominent beneath, costules none, veins anastomosing so as to form oblong, hexagonal oblique areoles with rarely a free included veinlet, sori rather distant oval arranged in a series close to the margin, deeply sunk into the substance of the frond forming elevated pustules on the upper side one to each crenature, the margin of the cavity elevated. *Hook. Sp. Fil.* v. 65 ;—*Bl. Fil. Jav.* p. 185. *t.* 55. *f.* 1. *Mett. Polyp.* p. 99, *t.* 1. *f.* 31—34 *venation.* *Drynaria* ; *J. Sm.*—*Fée*, 6 *me*, *Mém.*, p. 18. *t.* 8. *f.* 3.

The specimen figured is from Penang—(Sir W. Norris.)

Hab. Penang, Malacca, Mount Ophir, Luzon, Java.

• PLATE No. CCXXXIV.



Pleopeltis stenophylla (Bl.)

ALSOPHILA.

Gen. char. (omitted by mistake at page 20, Ferns of Southern India.)

Sori naked, or sometimes spuriously (*i. e.* squamose) involucrate; the receptacles globose or columnar, medial or axillary. Involucre non apparent or represented by a bullate scale, or a series of jointed hairs. Veins simple, forked, parallel-forked, or pinnate, from a central costa; venules free, unisoriferous.

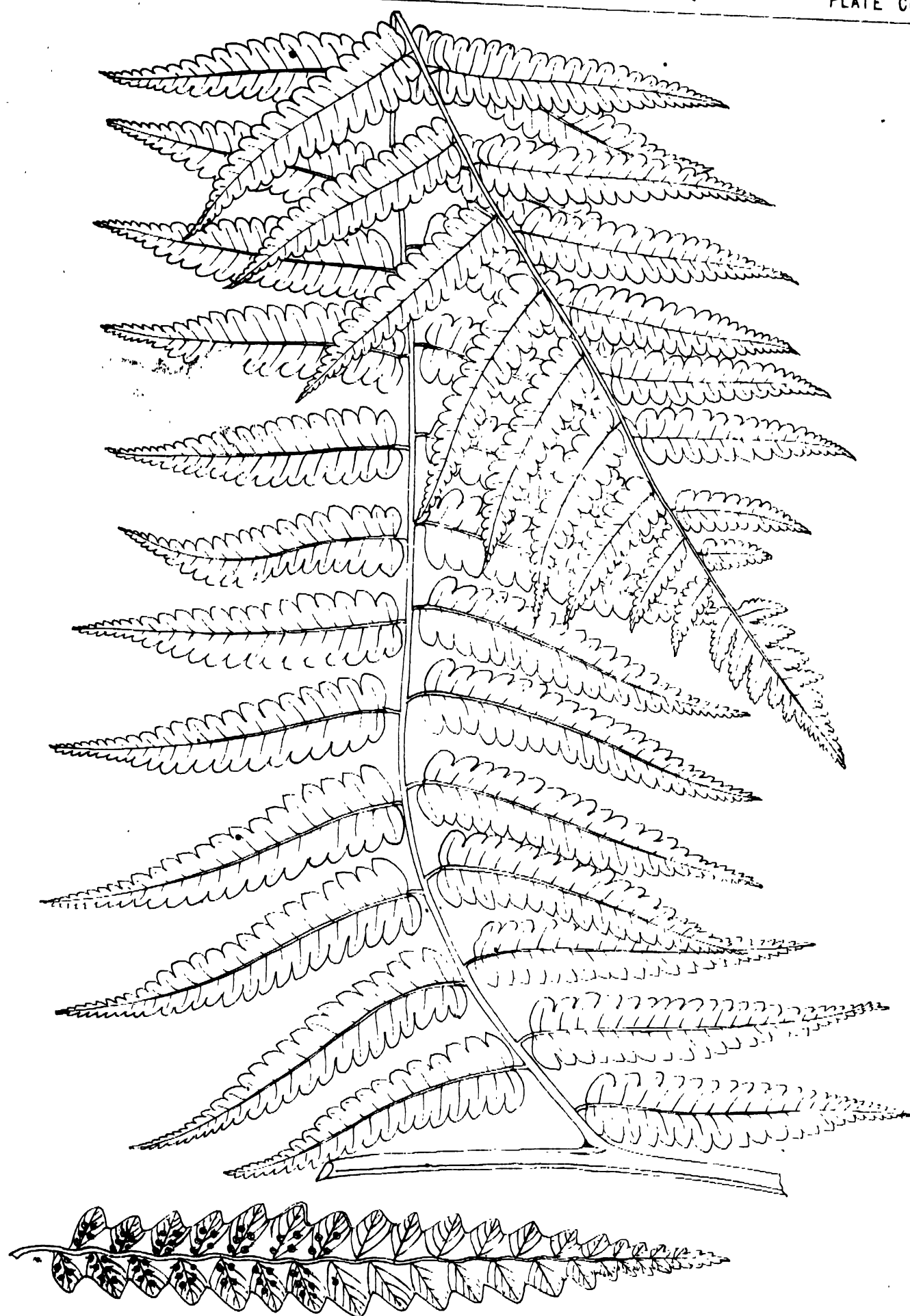
Fronds large, herbaceous or sub-coriaceous, bi-pinnate or decomposed. Trunk or caudex thick erect, sometimes branching, often arborescent (Moore), this genus differs from *Polypodium* in its elevated receptacle and in the obliquely compressed form of the spore-cases.

ALSOPHILA SQUAMULATA. (J. Sm. et Hook.) Frond bi-pinnate, partial rachis slightly squamose, pinnules all petiolate, sterile ones oblong-lanceolate, fertile portions contracted coriaceous glossy as if varnished ending in an acuminate serrulated point pinnatifid scarcely half way down to the rachis, segments ovate obtuse serrate, the margins thickened or very slightly recurved, veins simple, sori frequently confined to the lower part of the pinnules and placed close to the costa of the segments.—*Hook. Sp. Fil.* 1-51. *J. Sm. En. Fil. Philipp. in Hook Journ. of Bot.* v. iii. p. 419,—*Hook. Gen. Fil.* t. 100;—*Bl. En. Fil. Jav.* 243 ?

The specimen figured is from Mount Ophir—(Griffith.)

Hab. Mount Ophir, Malacca, Phillippine Islands, Java ?

PLATE No. CCXXXV.



Asophila squamulata (L. Sm. et Hook.)

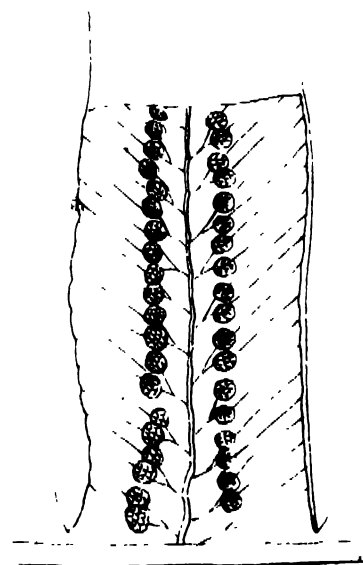
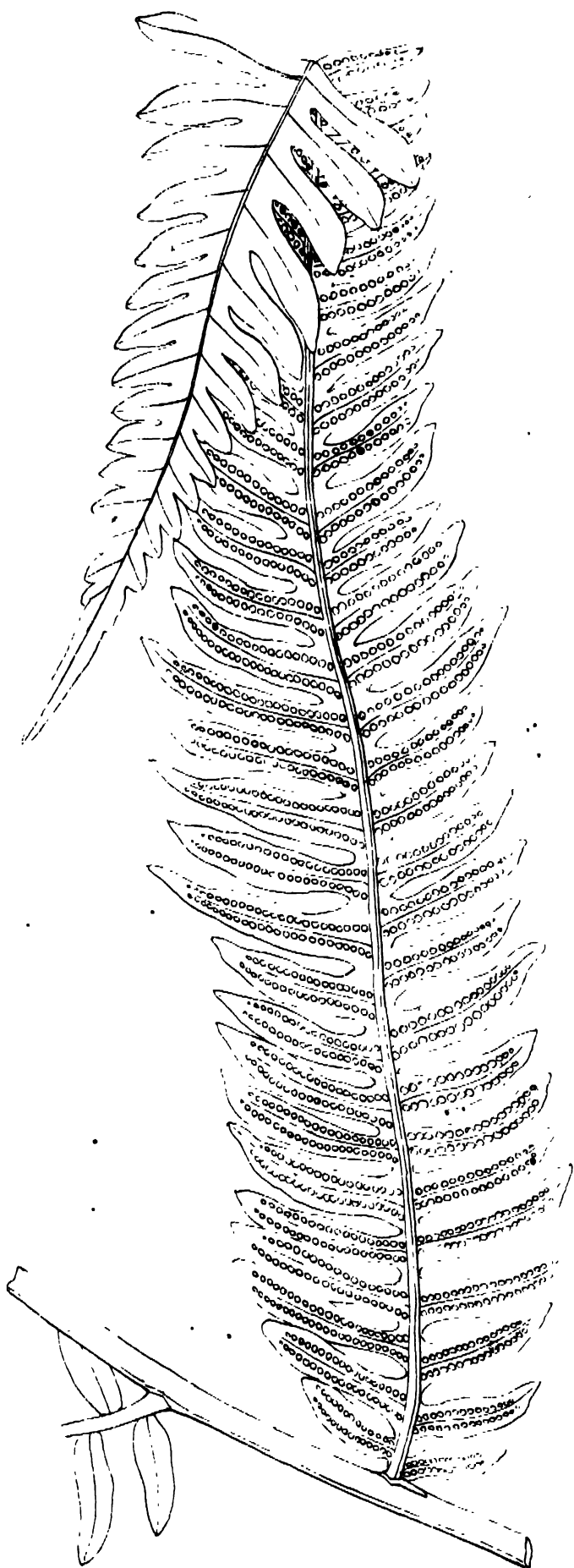
ALSOPHILA.

ALSOPHILA ALTERNANS. (Hook.) Unarmed or only with extremely minute distant tubercles on the base of the stipe^s fronds only (?) pinnate, pinnæ very remote, petiolate alternate oblong lanceolate membranaceo-coriaceous acuminate deeply pinnatifid almost to the rachis, at the base again pinnated, segments and pinnules oblong rounded at the apex with rather an acute point nearly entire, veins all free forked near the base rarely simple, sori on the veinlets above the fork, (seldom on the axil) copious, forming a series half way between the margin and the costa, each furnished with a little pellicular peltate scale (spuriously involucre) covered and concealed by the sorus.—*Hook. Syn. Fil.* ;—*Hemitelia* ? *alternans.* *Hook. Sp. Fil.* 1. p. 20. *Hook. Ic. Pl.* v. 7, t. 622 ;—*Polypodium alternans.* *Wall. Cat.* n. 329.

The specimen figured is from Penang—(Wallich.)

Hab. Penang.

PLATE No. CCXXXVI



Asplenium alternans Hook.

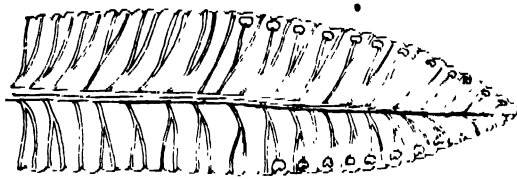
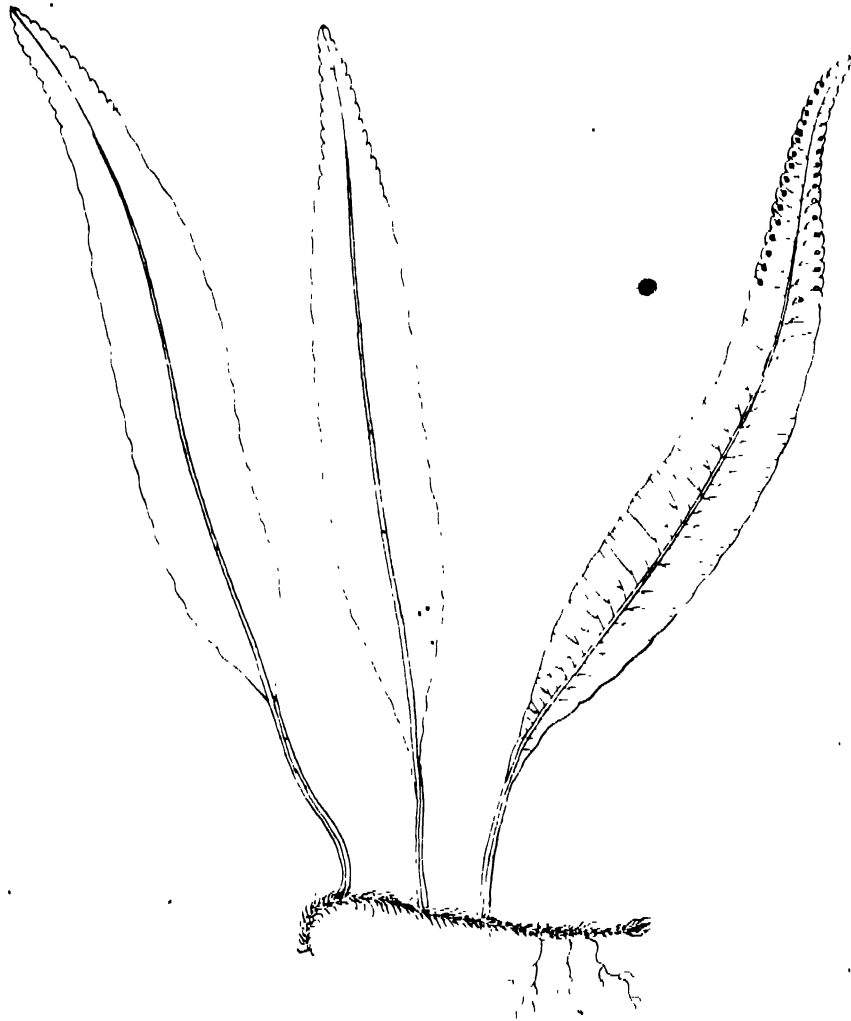
HUMATA.

HUMATA ANGUSTATA. (Wall.) Caudex rather stout creeping densely paleaceo-setose, fronds coriaceous lanceolate arising from a scaly bulb entire or dentate acuminate, fertile ones generally much elongated, obscurely sinuato-dentate, veins all parallel simple or forked thickened, involucres small transversely oval, forming a single series along the margin. *Hook. Sp. Fil.* 1. 152. *Wall. Cat.* 242 ;—*Hook. et. Grev. Ic. Fil. t.* 231.

The specimen figured is from Singapore —(Wallich.)

Hab. Singapore (on trunks of trees), Penang.

PLATE No. CCXXXVII.



Humana angustata

Hall

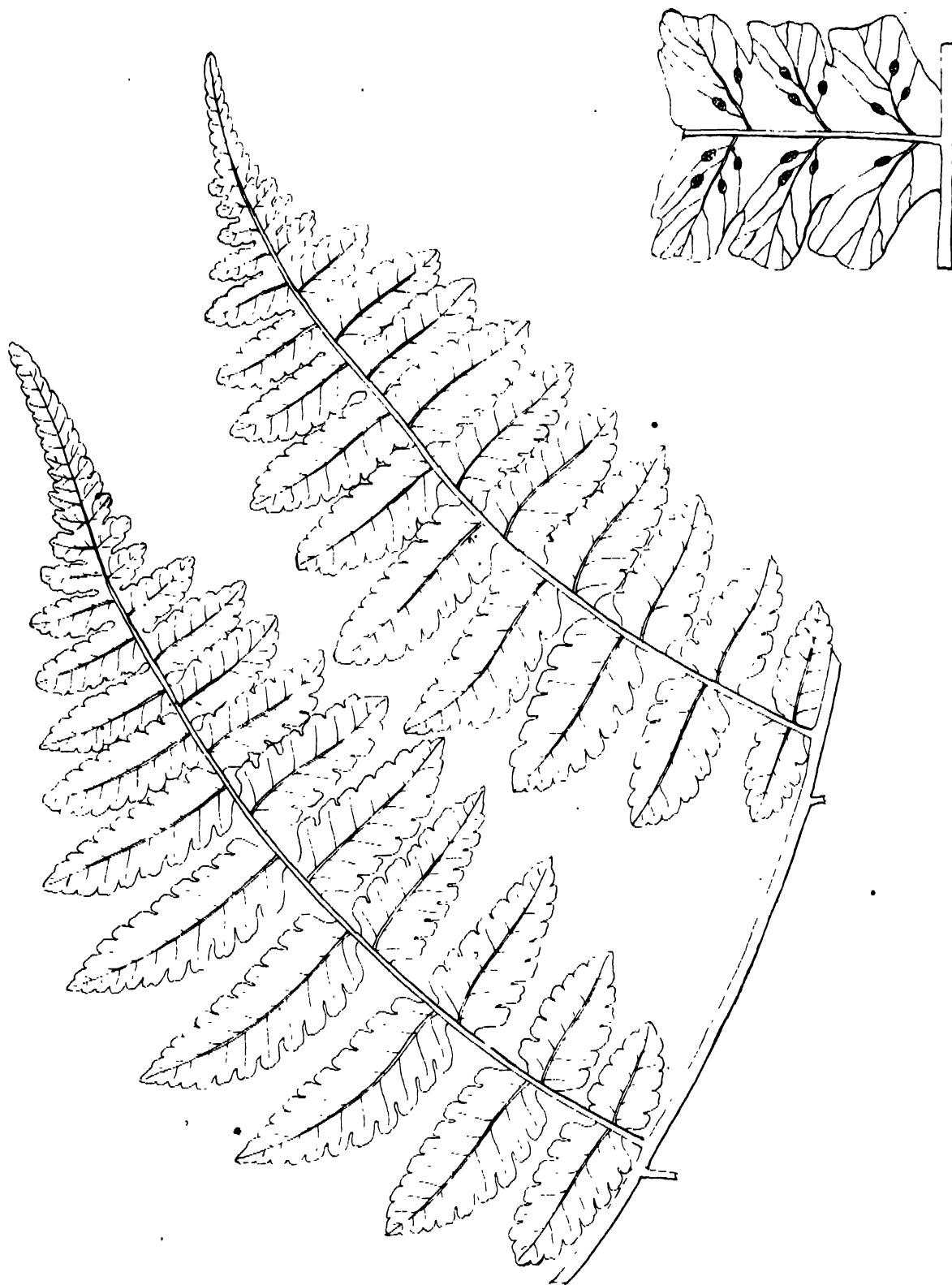
GYMNGORAMMA.

GYMNOGRAMMA OPACA. (Spr.) Caudex ? stipites $1\frac{1}{2}$ and more feet long, fronds 2 feet and more long, nearly a foot wide at base, subdeltoideo-ovate acute membranaceous, pubescent on the rachises and costæ bi-pinnate below, pinnate in the middle, pinnatifid at the apex, lower primary pinnae petiolate 6 inches long 3 inches wide oblongo-ovate, their pinnules $1-1\frac{1}{2}$ inch long less than $\frac{1}{2}$ an inch wide, oblong sessile and adnate and slightly decurrent at the base, obtuse or acute lobato-pinnatifid, the lobes retuse or emarginate, intermediate primary pinnae deeply pinnatifid sinuato-serrate, veins fasciculato-pinnate, a fascicle to each lobe of the pinnules or large segments, soriiferous only at the base of the lower branches, sori oblong forked.—*Hook. Sp. Fil.* v. p. 143. *Gymnogramma obtusata. Bl. Fil. Jav. p. 97. t. 43. and Hook. Sp. Fil.* v. 143 ;—*G. opaca Spr.* ;—*Phegopteris opaca, Mett. Pheg. p. 15* ;—*Hemiomitis, Don.* ;—*Gymnog. arborescens, De. Vriese. in Herb. Hook.*

The specimen figured is from Nepal—(Wallich.)

Hab. Nepal, Khasya, Java.

PLATE No. CCXXXVIII.



Gymnogamnia spaca

227

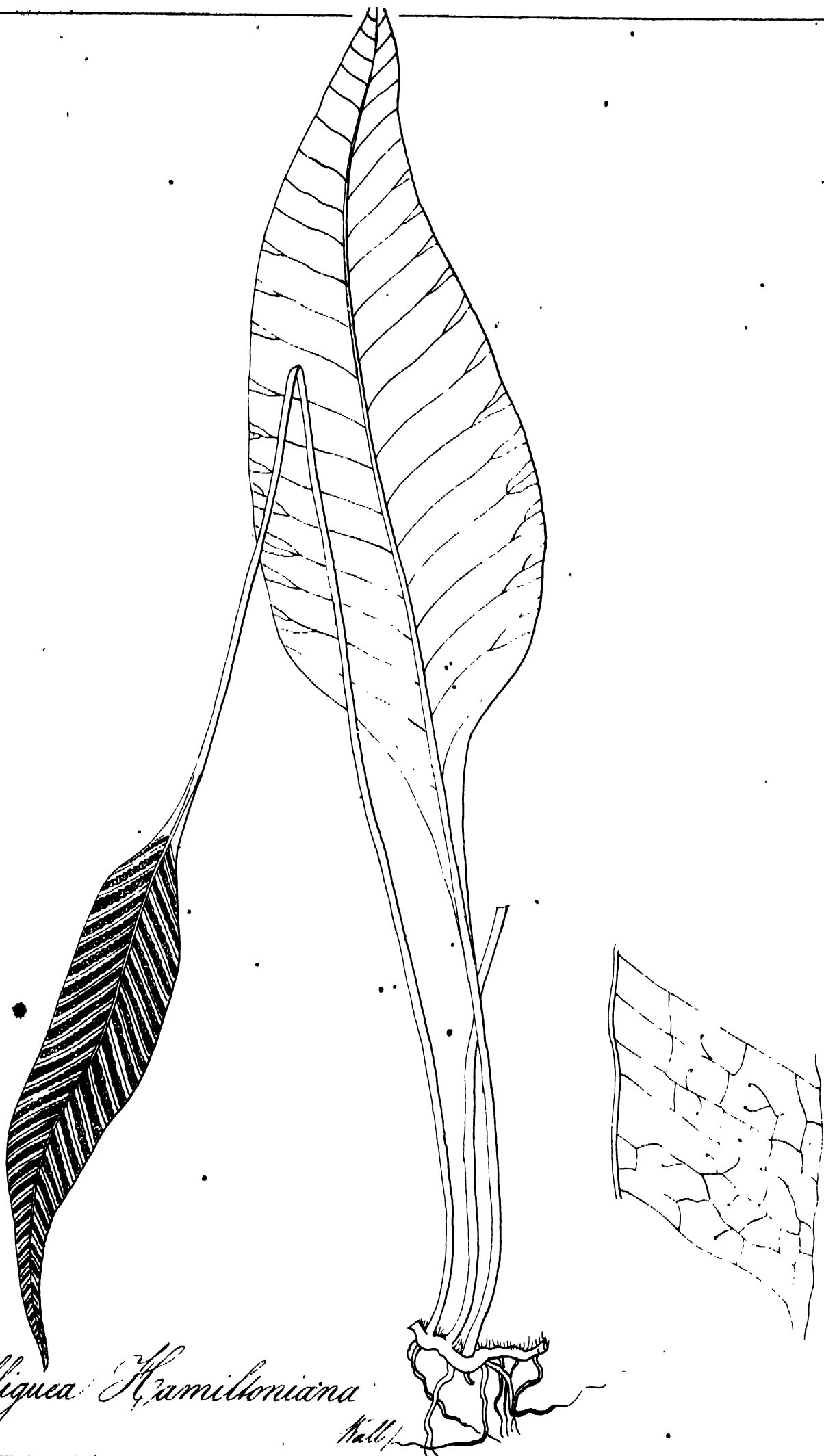
SELLIGUEA.

SELLIGUEA HAMILTONIANA. (Wall.) Caudex creeping, partially paleaceous with subulate black scales, stipites distant 2-4 inches long, in the sterile fronds a foot and more long, more slender in the fertile, fronds dimorphous, subcoriaceous-membranaceous subopaque glabrous sinnato-dentate ovate or ovato-lanceolate, acuminate at the base long-attenuated and decurrent upon the stipes; sterile ones 5-18 inches long; fertile 3 rarely exceeding 5 inches long, primary veins costuliform flexuose horizontally patent distant, united by transverse veins forming large square areoles including several lesser ones which generally include free veinlets, sori copious, oblong continuous alternating with the costular veins equally long with them, at length confluent.—*Hook. Sp. Fil.* v. 161. *Wall Cat.* n. 9. *Pr. Tent. Pterid.* p. 216. *t.* 9. *f.* 16, and *S. Hookeri*. Presl. *l. c.*;—*Ceterach pedunculata*. *Hook. and Grev. Ic. Fil.* *t.* 5;—*Selliguea*, Presl. *Epim. Bot.* p. 146.

The specimen figured is from Sylhet—(Wallich.)

Hab. Sylhet, Khasya, Mishmee.

PLATE No. CCXXXIX.



Seligella Hamiltoniana

Hall.

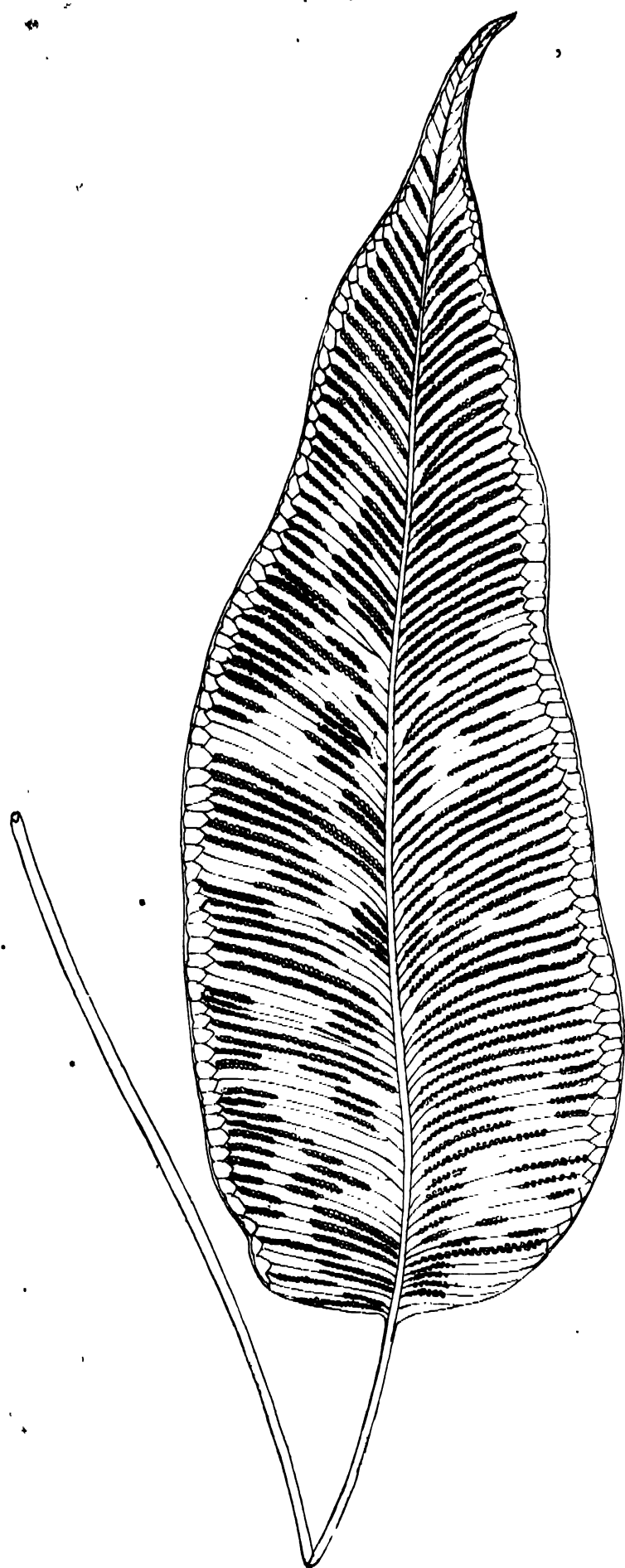
SYNGRAMMA.

SYNGRAMMA ALISMÆFOLIA. (Hook.) Caudex creeping stipites a span to a foot and more long blackish-purple, fronds subcoriaceous-membranaceous, simple 5-8 inches long $2\frac{1}{2}$ inches wide near the base, from a rounded base ovate or ovato-lanceolate, finely acuminate, veins numerous approximate simple or forked anastomosing only at the margin into 1-2 rarely more series of oblong hexagonal areoles, sori narrow-linear on all the straight veins but scarcely extending to the anastomosing ones. *Hook. Sp. Fil.* v. 155; *J. Sm. in Hook. Lond. Journ. Bot.* 1845, p. 168. t. 7, 8, B. *Pr. Epim. Bot.* p. 144;—*Diplazium*, *Pr. Rel. Hoenk.* 1. p. 49 t. 8. f. 3. (sori inaccurate);—*Oxygonium*, *Pr. Tent. Pterid.* p. 118. t. 4. f. 11. (venation only);—*Callogramme Cæcilisæ Fée 7 me. Mém. Foug. Nouv.* p. 41. t. 8. f. 1.

The specimen figured is from Singapore—(Lobb.)

Hab. Singapore, Luzon.

PLATE No. CCXL.



Syngamma alismifolia

Hook.

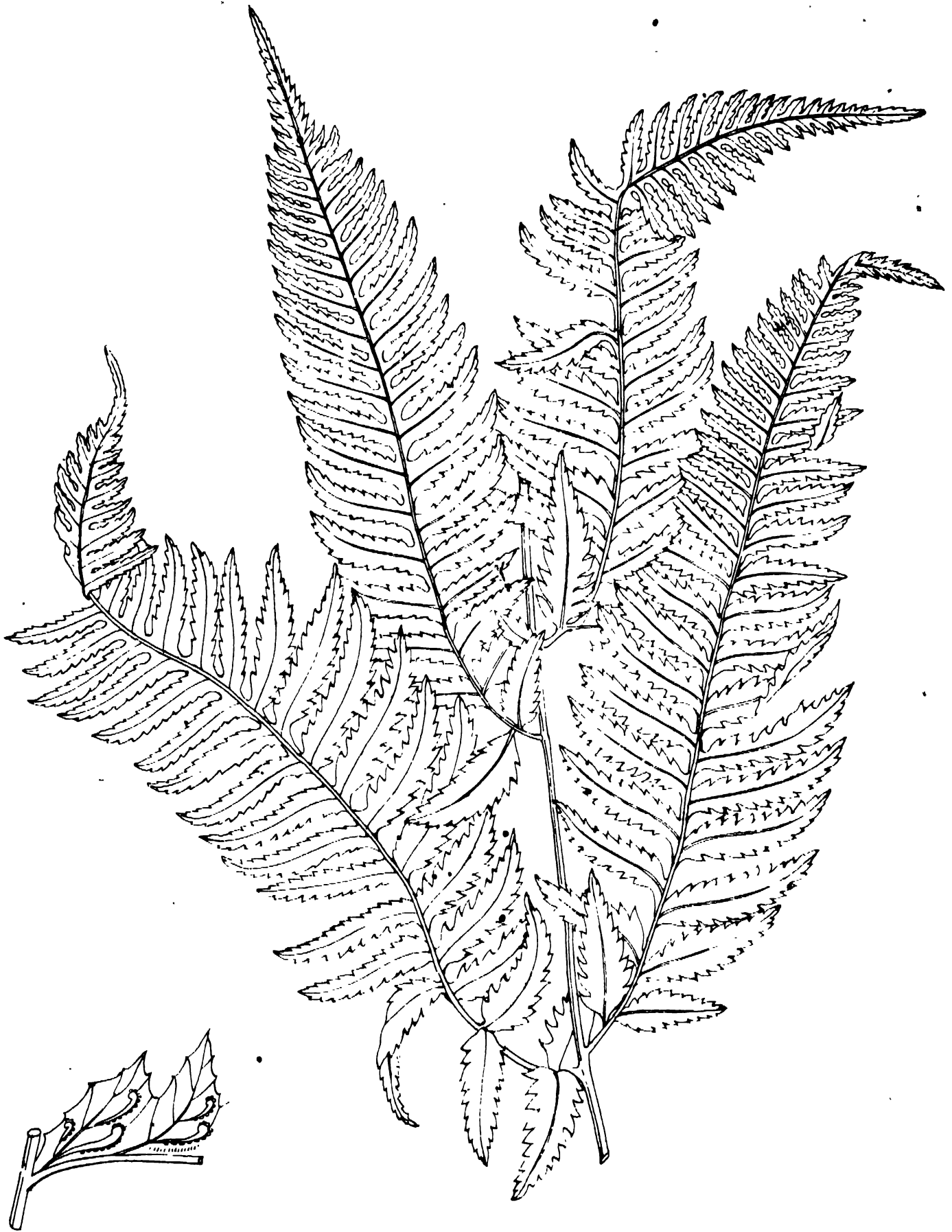
ATHYRIUM.

ATHYRIUM BREVISORUM. (Wall.) Caudex? stipes $1\frac{1}{2}$ foot and more long stramineous-brown below, scarcely a line wide glossy, frond $1\frac{1}{2}$ -2 ft. long ovato-lanceolate membranaceous bi-tripinnate, primary pinnæ long-petiolate remote erecto-patent a foot and more long broad-lanceolate acuminate, secondary pinnæ 5-6 inches long lanceolate nearly sessile pinnated, pinnules numerous approximate oblong-lanceolate much acuminate horizontally patent $1-1\frac{1}{2}$ inch long coarsely serrated rarely subpinnatifid the serratures very acute almost mucronate lowest pinnules more distant on short petiolules, intermediate ones more approximate the lower base decurrent, upper ones confluent, veins pinnated, veinlets forked once or more, sori generally in two rows oblique near the costule in the pinnules that are pinnatifid extending to the lobes small short-linear straight or lunate, involucre slightly convex jagged at the margin, main rachis stramineous glossy flexuose. *Hook. Sp. Fil.* iii. 229 ;—*Wall. n.* 220, (not *Mett.*).

The specimen figured is from the mountains near Ava—(Wallich).

Hab. Ava mountains, Mishmee, Port Natal?

PLATE No. CCXLI.



Schizium brevicaule. (Walt.)

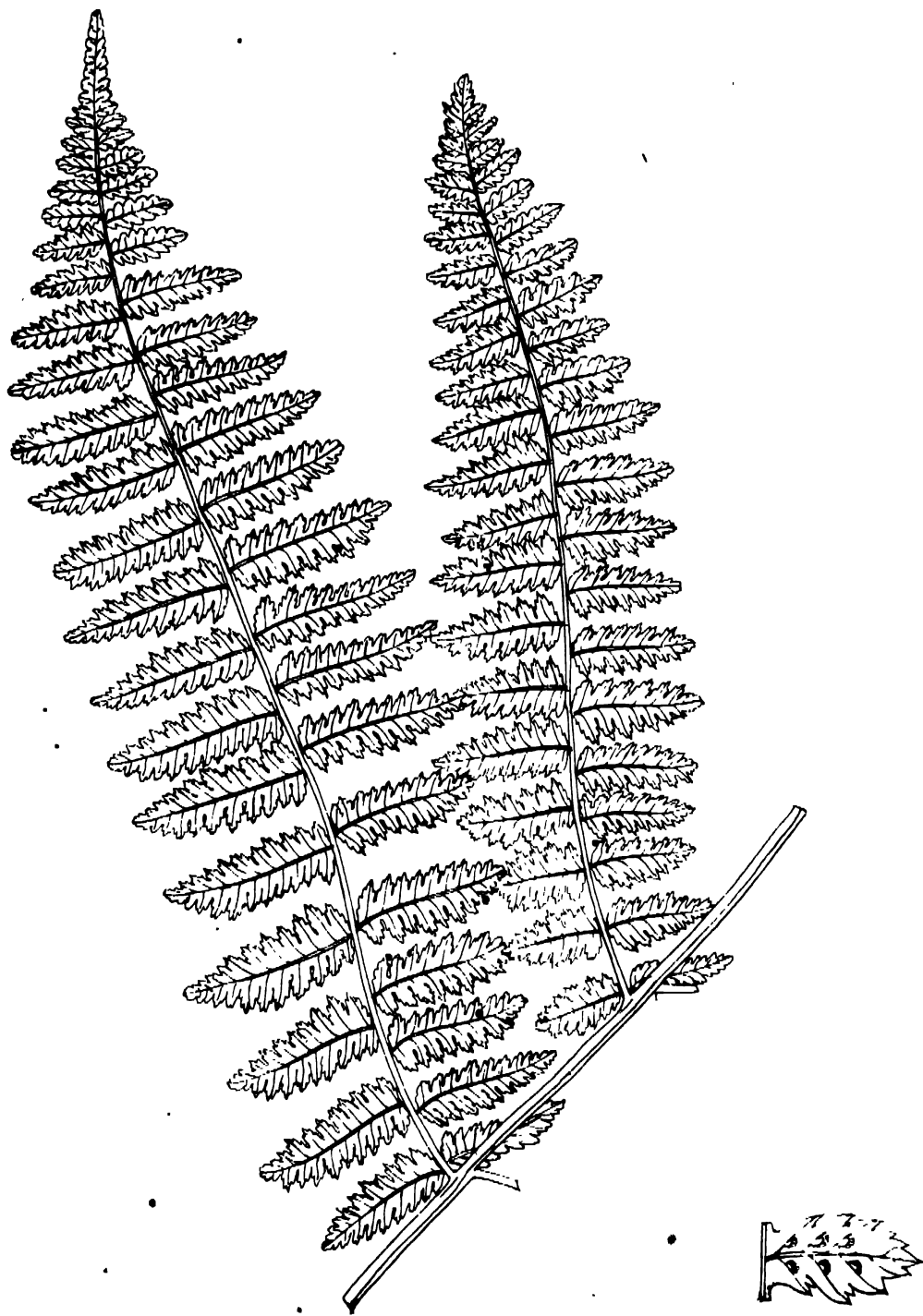
ATHYRIUM.

ATHYRIUM SUBTRIANGULARE. (Hook. MSS.) Stipe 8-10 inch long smooth and naked above, clothed below with a few large lanceolate brown scales, frond about a foot each way deltoid tripinnatifid, lower pinnæ much the largest 4-6 inches long, $1\frac{1}{2}$ -2 inch broad, pinnules oblong-lanceolate cut down nearly to the rachis into numerous close sharply-toothed linear-oblong lobes, texture herbaceous, rachises and surfaces naked, veinlets of the segments 4-5 on each side, the lower ones forked, upper sori round, the lower ones oblong, sometimes slightly curved—*Athyrium crenatum* var. β .—*Hook. Sp. Fil.* iii. 225. *A Hookerianum Moore.* Allied to the Siberian and North European *A crenatum* (*Fries*), but much more finely divided and sharply cut, and the sori are almost like those of *Cyrtopteris*.

The specimen figured is from Sikkim—(Dr. Hooker), and represents the two lowest pinnæ: the outline of the whole frond is exactly deltoid.

Hab. Sikkim—Himalaya, 10—12 000 ft. elevation.

PLATE No. CCXLII.



Adiantum subtriangulare.

, Hook.

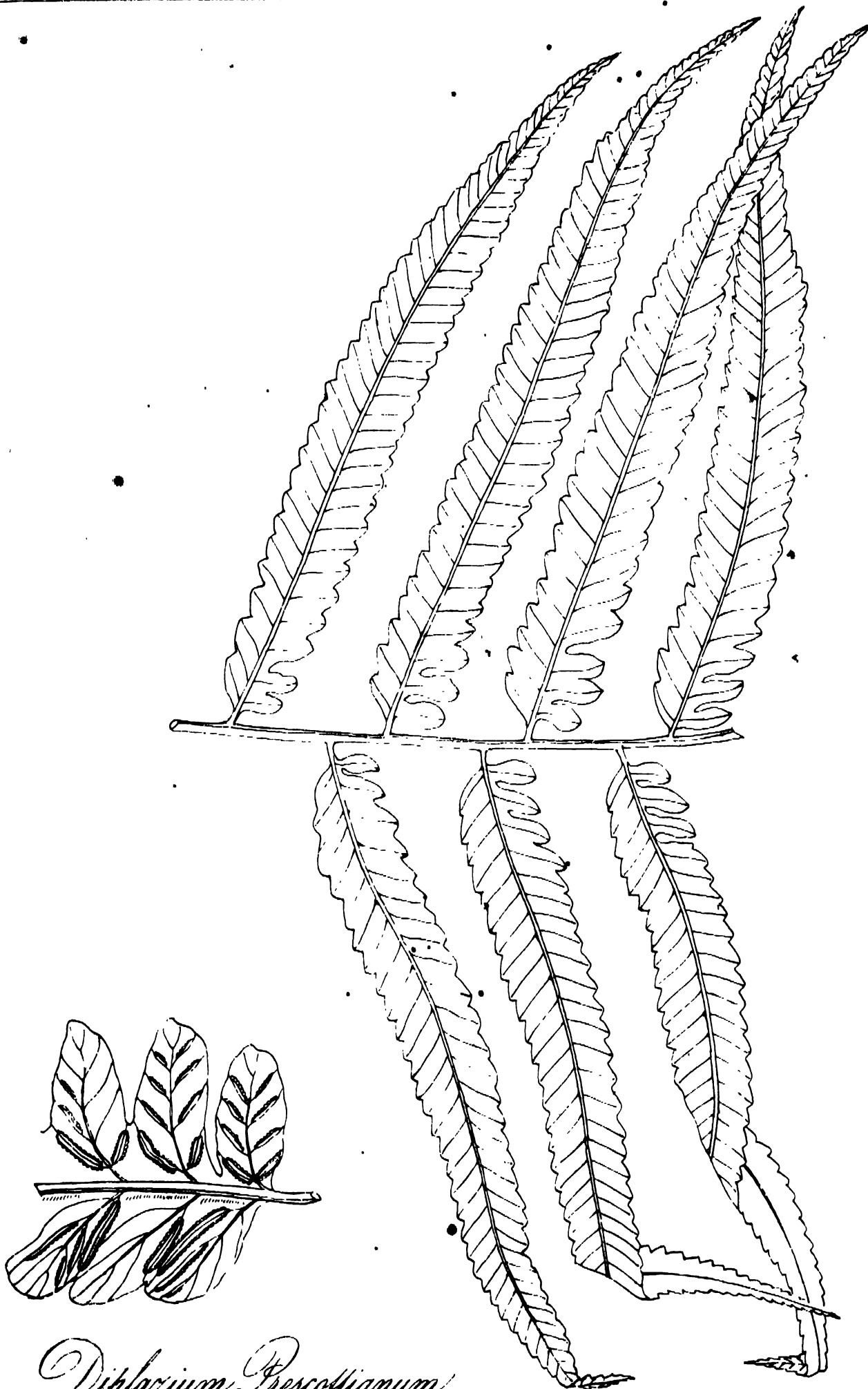
DIPLAZIUM.

DIPLAZIUM PRESCOTTIANUM. (Wall.) Caudex? stipes a foot and more long tawny-brown, frond $1\frac{1}{2}$ foot and more long subdeltoideo-ovate, sub-coriaceo-membranaceous acuminate pinnate, pinnæ 5-6 inches long, $\frac{1}{2}$ an inch or a little more wide from an obliquely cuneate and rather long petiolated base linear-lanceolate acuminate very patent, lower ones dentato-pinnatifid, intermediate ones with 3-4 of the superior basal lobes cut down to the costa (almost pinnules), superior ones with a solitary auricle at the base above, terminal ones short entire confluent into a lanceolate pinnatifid acumen, veins patent pinnate each fascicle corresponding with a lobe dichotomous most of the branches bearing diplazioid sori of unequal lengths. *Hook. Sp. Fil.* iii. 251. *Wall. Cat. n.* 235.—var. β . superior pinnæ only with a solitary prominent auricle—var. γ pinnules destitute of auricle or any deep lobes.

The specimen (var. β .) figured is from Singapore—(Wallich.)

Hub.—var. β . Singapore, var. γ . Penang.

PLATE No. CCXLIII.



Diplazium Prescottianum

Wall.

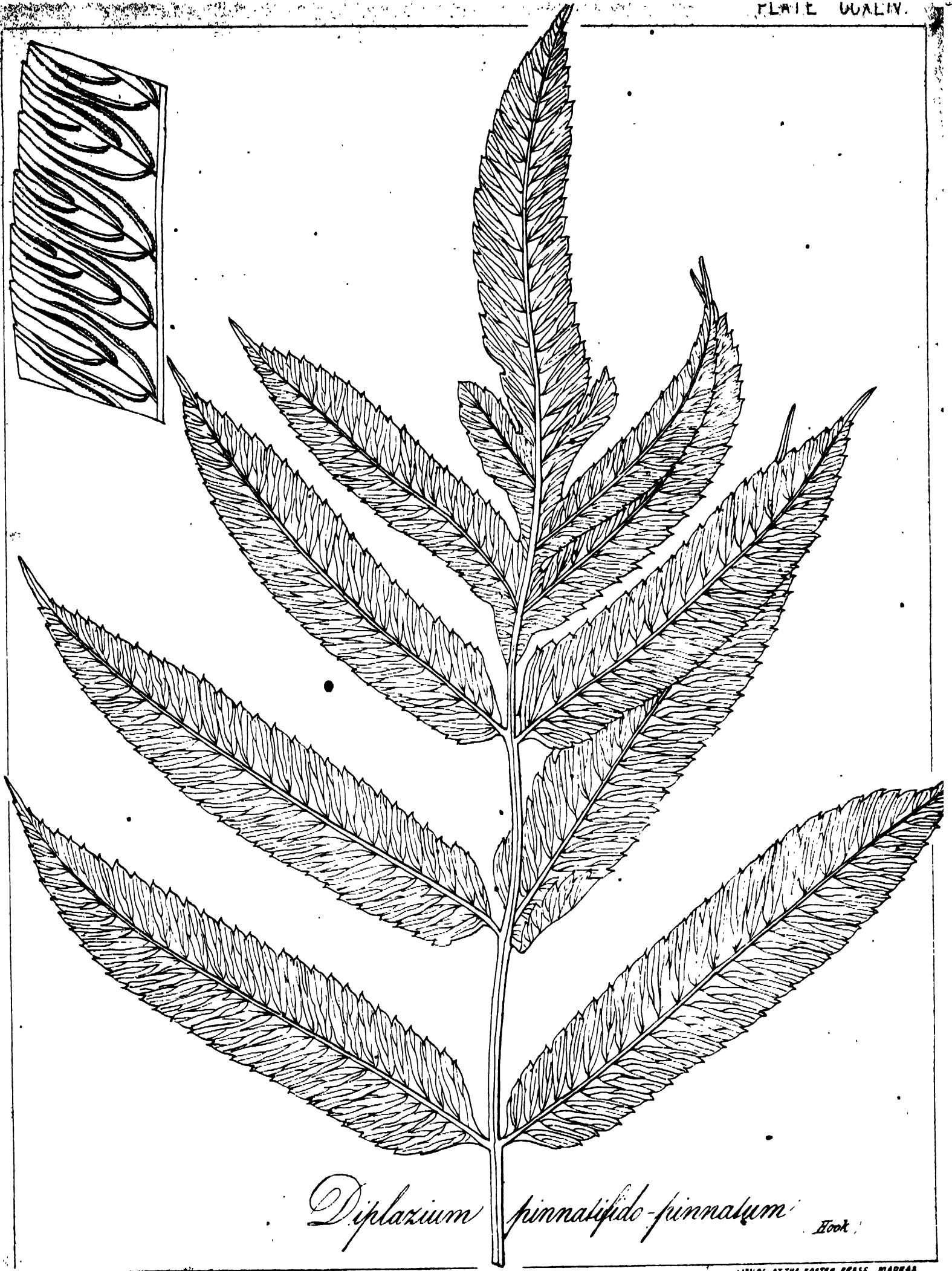
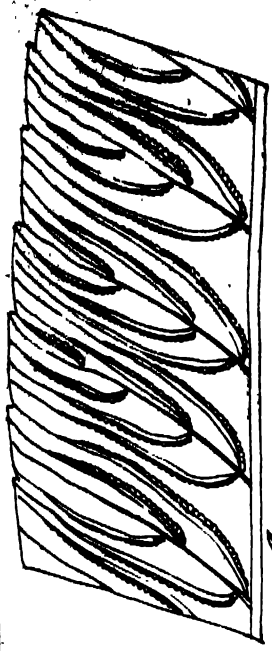
DIPLAZIUM.

DIPLAZIUM PINNATIFIDO-PINNATUM. (Hook.) Caudex erect thick with very coarse rooting fibres, stipites aggregate furrowed in front, rather stout a foot and more long, fronds 9-10 inches long broad-ovate nearly as broad as long firm-coriaceous opaque, pinnae large 13-15, about 5 inches long very patent $1\frac{1}{2}$ inch wide from a rather broad-cuneate nearly sessile base oblong-lanceolate acuminate strongly serrated those of the upper half of the frond confluent at the base, terminal segment large, lobed at the base, veins in pinnated fascicles very patent, sori narrow-linear all diplazioid, frequently short and approximate to the costa. *Hook. Sp. Fil. iii. 238.*

The specimen figured is from Mishmee—(Griffith.)

Hab. Mishmee.

PLATE No. CCXLIV.



Diplazium pinnatifido-pinnatum Hook.

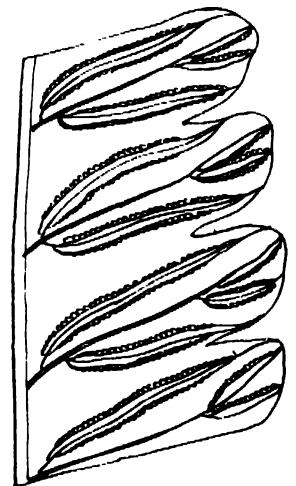
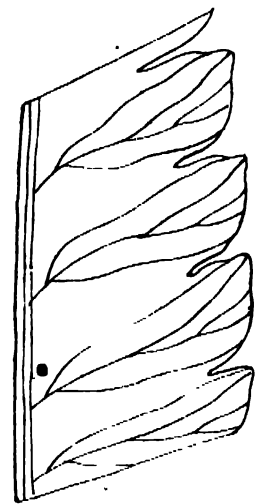
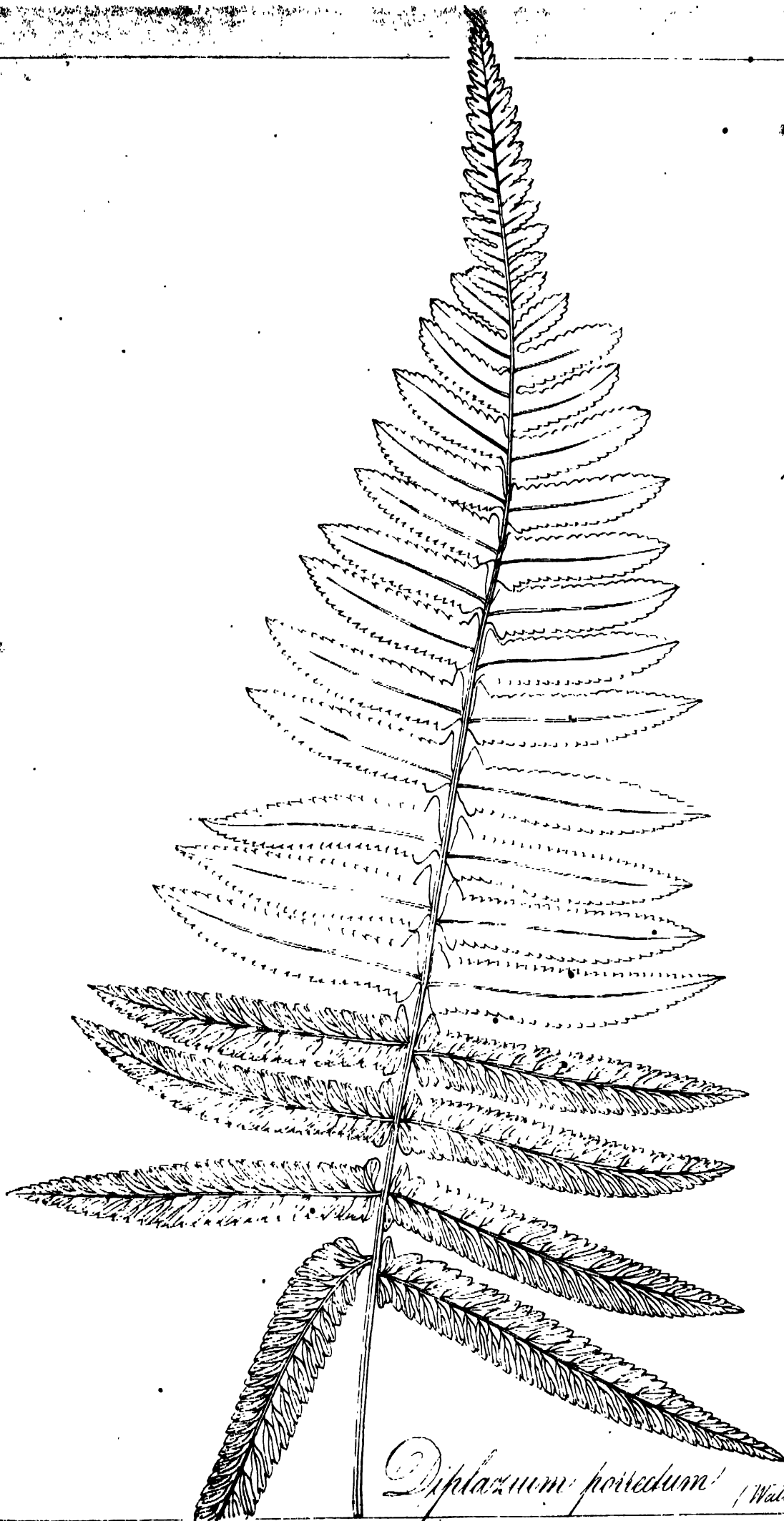
DIPLAZIUM.

DIPLAZIUM PORRECTUM. (Wall.) Caudex erect or ascending stipites tufted 6-12 inches long subcastaneous, fronds 8-10 inches to 1½ foot long deltoid-oblong or pyramidal pinnate, pinnae horizontal numerous 4-6 inches long petiolate or sessile and confluent at the acuminate pinnatifid apex, from a broad truncated and auricled or generally quite hastate base (having a distinct auricle above and below) linear-lanceolate obtuse or acuminate, lower ones more or less deeply pinnatifid, intermediate ones obtusely dentate, uppermost ones entire at the margins, veins patent pinnatifid in the auricles the rest once or twice forked, sori linear elongated confined to the superior or basal veinlet and extending its whole length, or on the two outer ones, mostly diplazioid, involucres membranaceous when young. *Hook. Sp. Fil.* iii. 250 ;—*Wall. Cat.* 204 ;—(afterwards at p. 63 altered to *A. multisoratum*) (not 224 *Wallich*, which is *A. protensum* from *Mauritius*, and is afterwards at p. 63 altered to *A. polyodon*.) *Mett. Aspl.* p. 177. t. 5. f. 1, 2 ;—*Aspl. auriculatum*. *Wall. Herb.* 1823 and *Cat. n.* 204 as synonym to *A. porrectum*—*Dipl. Pr. Tent. Pterid.* p. 113,—*Aspl. phanerotis*. *Kze. in Bot Zeit.* p. 194.

The specimen figured is from Penang—(Wallich.)

Hab. Penang and Singapore, Chapadong Hill, Malacca, Borneo.

PLATE No. CCXLV.



Diplazium portectum (Wall.)

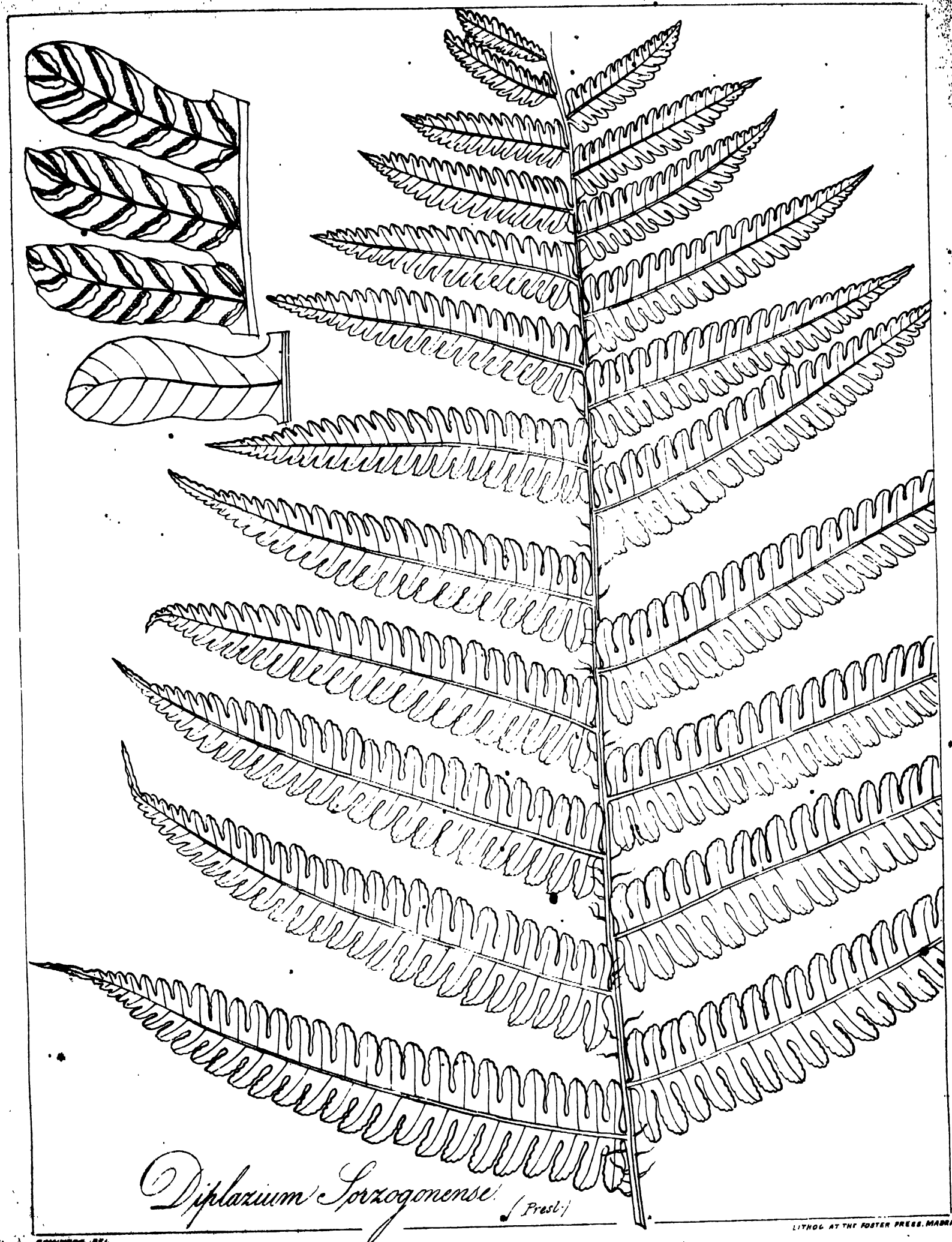
DIPLAZIUM.

DIPLAZIUM SORZOGONENSE. (Presl.) Caudex stout horizontal densely covered with long subulate falcate black-brown, stipites scattered distant stout 4 inches to a span long purplish-brown shaggy with crinite, curly, black brown scales deflexed towards the base, fronds 1-2 feet long subcoriaceous dark blackish green when dry, ovato-lanceolate pinnate pinnatifid at the apex, pinnæ numerous horizontal sessile or nearly so $2\frac{1}{2}$ to nearly 6 inches long from a truncated base oblong elongate or linear-oblong acuminate pinnatifid serrated towards the apex, segments more or less deep oblong obtuse or retuse subfalcate entire or serrated at the apex, veins pinnated in each lobe, veinlets simple obliquely patent almost all soriferous, sori linear lower ones only diplazoid, rachis and costæ especially beneath deciduously crinite or hairy. *Hook. Sp. Fil.* iii. 252 :—*Pr. Rel. Hænk.* 1 p. 45 ;—*Mett. Asp.* p. 185 ;—*Pr. Tent Pter.* p. 114 , *Hypochlamys.* *Fée Gen. Fil.* p. 200 ; *D. acuminatum.* *Bl. En. Fil. Jav.* p. 193 ? *D. Smithianum*,—*Kze. Bot Zeit.* vi p. 195.

The specimen figured is from Sikkim,—(Hook. Fil. and Thomson)

Hab. Sikkim 8—10,000 feet, Bhotan, Luzon, and Sorzogon, Java, Leyte, Borneo &

PLATE No. CCXLVI.



Diplazium Sprzegonense (Presl.)

DIPLAZIUM.

DIPLAZIUM LOBULOSUM. (Wall) Caudex erect small densely clothed with the bases of old stipites paleaceous, stipites tufted 5-6 inches long, fronds broad-lanceolate acuminate membranaceous a span to 14 inches long pinnated pinnatifid at the apex, pinnae on slender petioles $1\frac{1}{2}$ -3 inches long very patent broad-lanceolate falcate sharply acuminate truncated and auricled at the superior base, inferior base excised the margin more or less deeply lobed, lobes as well as the auricles spinulosely inciso-serrate, costa slender flexuose vein-like, veins in oblique fascicles corresponding to each lobe, dichotomous lowest superior branch only soriferous, sori mostly asplenioid linear neither attaining the costa nor the margin. *Hook. Sp. Fl.* iii. 252, — *Wall. Cat.* n. 210; — *Mett. Aspl.* p. 163. *D. longifolium*, *Moore. Ind. Fl.* p. 141.

The specimen figured is from Nepaul—(Wallich).

Hab. Nepaul, Simla.

PLATE No. CCXLVII.



Diplazium lobulosum

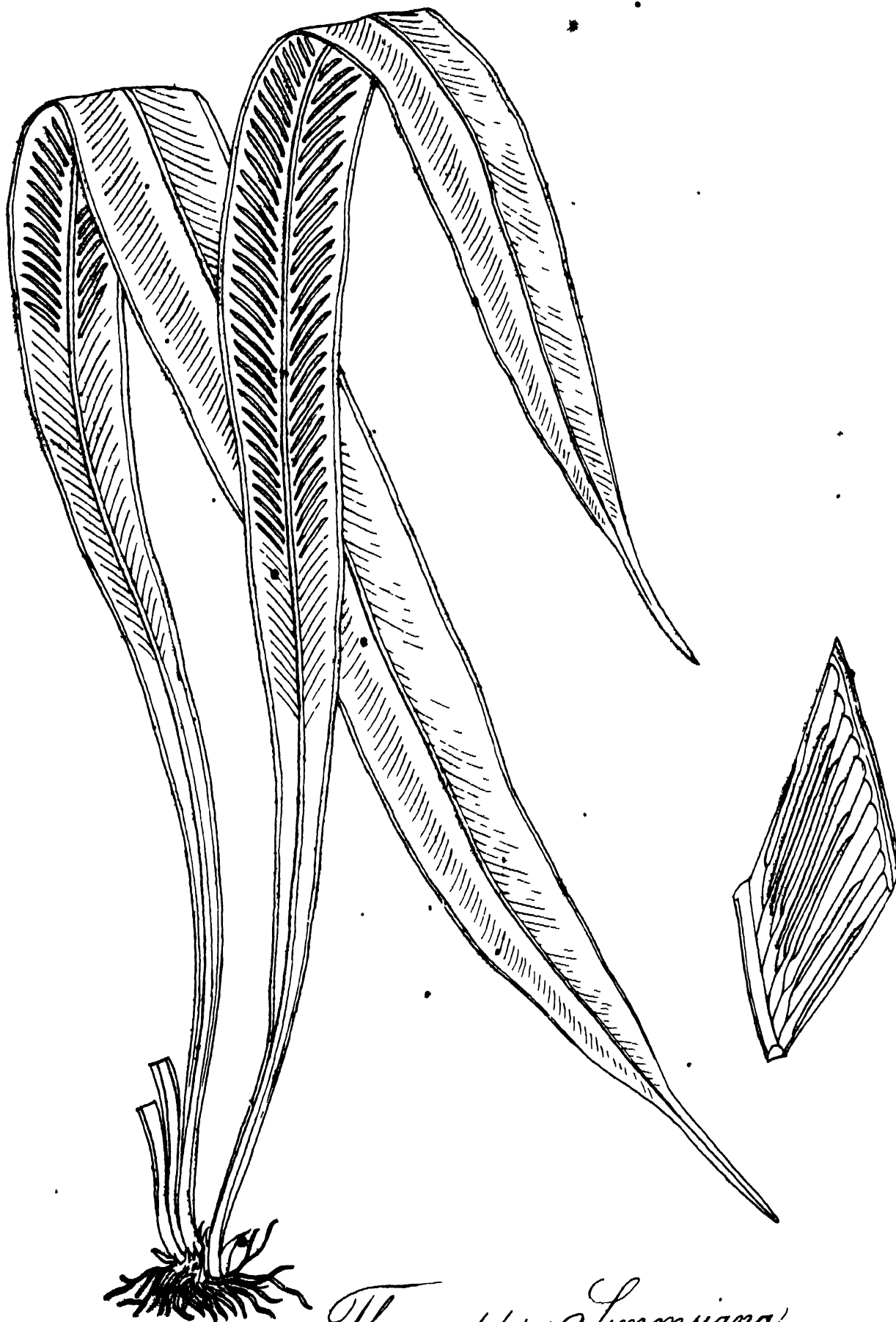
THAMNOPTERIS.

THAMNOPTERIS SIMONSIANA. (Hook.) Small, fronds $1\frac{1}{2}$ foot long, $1\frac{1}{2}$ inch broad cespitose chartaceous, elongato-lanceolate abruptly and narrowly acuminate (rostrate) gradually and very much attenuated below into a short stipes, veins approximate suberecto-patent, sori copious rather distant, three-fourths the length of the veins and occupying three-fourths of the superior portion of the frond: *Hook. Sp. Fil.* iii. 81. *Ic. Plant.* t. 925. *Mett. Asp.* p. 86.

The specimen figured is from Khasya—(Simons).

Hab. Khasya and Unker Hills.

PLATE No. CCXLVIII.



Thamnopteris Simonsiana / Hook.

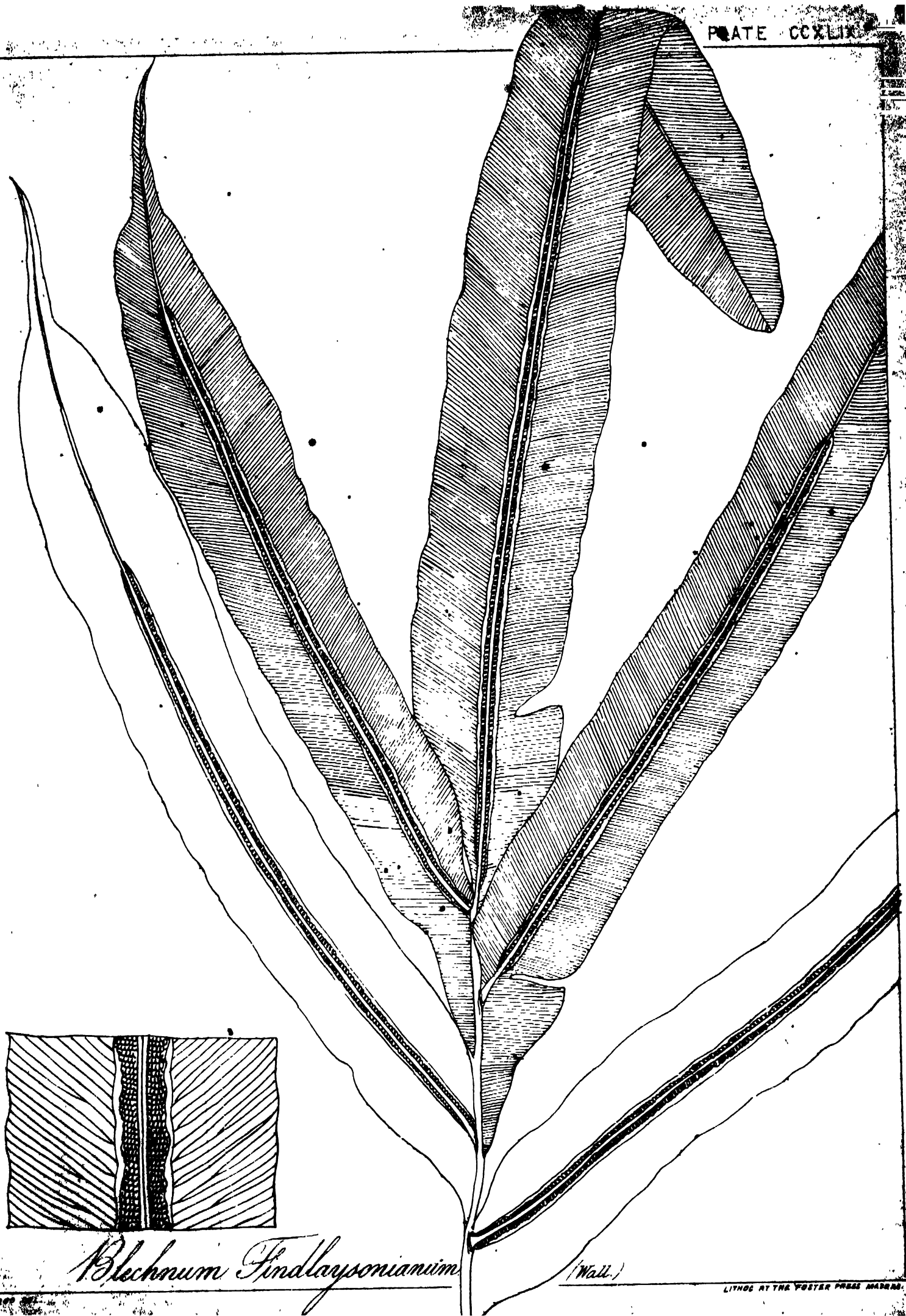
BLECHNUM.

BLECHNUM FINDLAYSONIANUM. (Wall.) Caudex very small, stipes short, frond ample 2-4 feet ovato-lanceolate subcoriaceous pinnated, pinnæ erecto-patent rather distant 6-12-14 inches long 1 inch to $1\frac{1}{4}$ wide oblong or elongato-oblong sessile obliquely cuneate at the base entire, upper ones much decurrent, but (except the two upper ones) not coadunate, the apex suddenly and sharply acuminate, several of the lowest pairs abortive reduced to small hard scales, the surface glossy, veins obscure compact parallel, sori close to the costa, continuous narrow-linear, involucre also very narrow and indistinct. *Hook. Sp. Fil.* iii. 53. *Wall. Cat. n.* 2172. *Hook. et. Grev. Ic. Fil. t.* 225. *Blechnopsis Findlaysoniana.* *Pr. Epim. Bot. p.* 116.

The specimen figured is from Singapore.

Hab. Singapore, Penang, Labuan, Borneo.

PLATE No. CCXLIX.



Blechnum Findlaysonianum

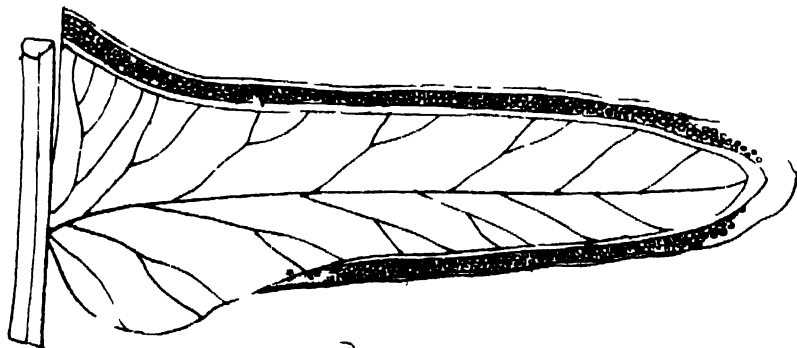
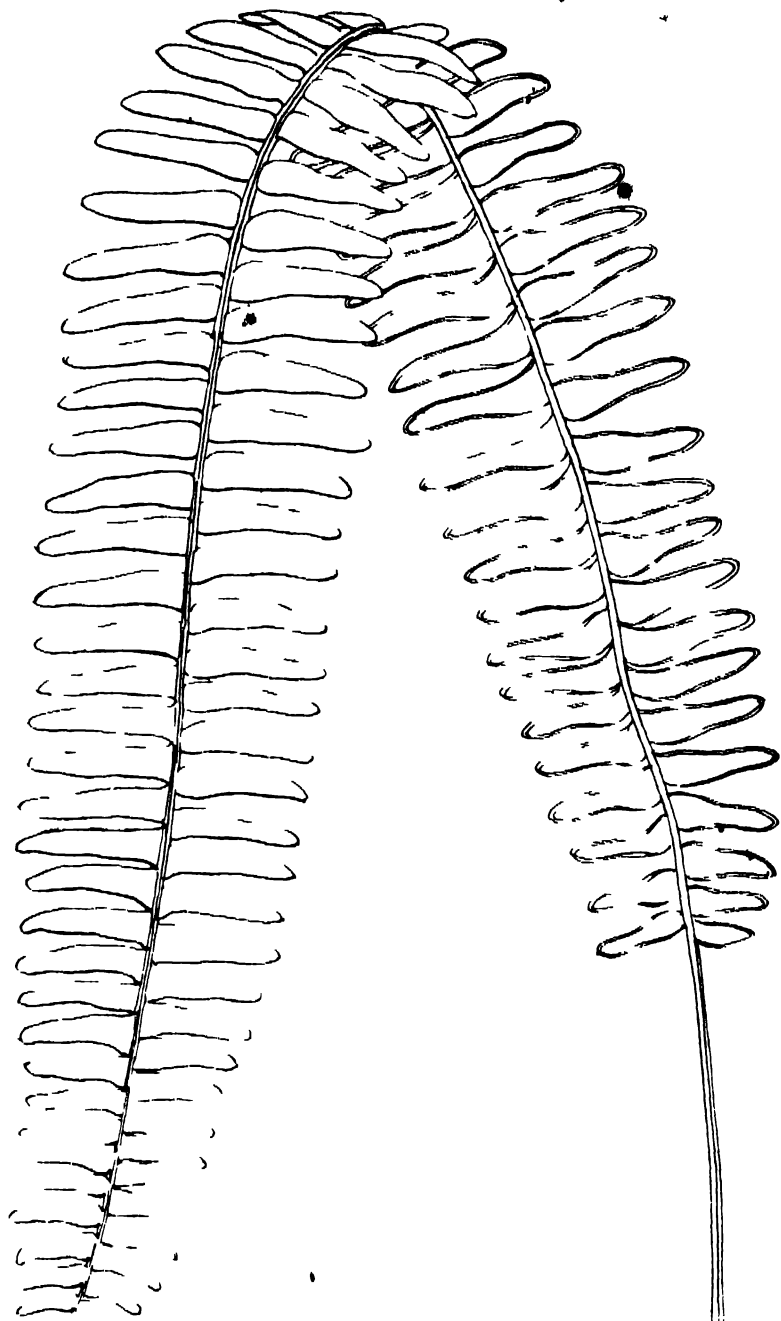
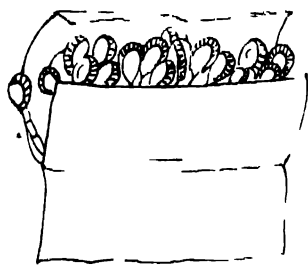
LINDSÆA.

LINDSÆA DIVERGENS. (Hook. et. Grev.) Caudex creeping, stipes and rachis ebony-black glossy, fronds lanceolate pinnate, pinnae approximate crowded horizontal lanceolate obtuse subsemihastate at the base, glaucous beneath, the sides equal, costa central, veins oblique once forked distant internal obscure, sorus marginal and continuous on both edges and at the apex. *Hook. Sp. Fil.* ♀. 210 ;—*Hook. et. Grev. Ic. Fil.* f. 226. *Vittaria divergens.* *Herb. Roxb. Wall. Cat.* n. 2191.

The specimen figured is from Malacca—(Griffith.)

Hab. Malacca—Prince of Wales' Island.

PLATE No. CCL.



Lindsaea divergens

(Hook et Grev.)

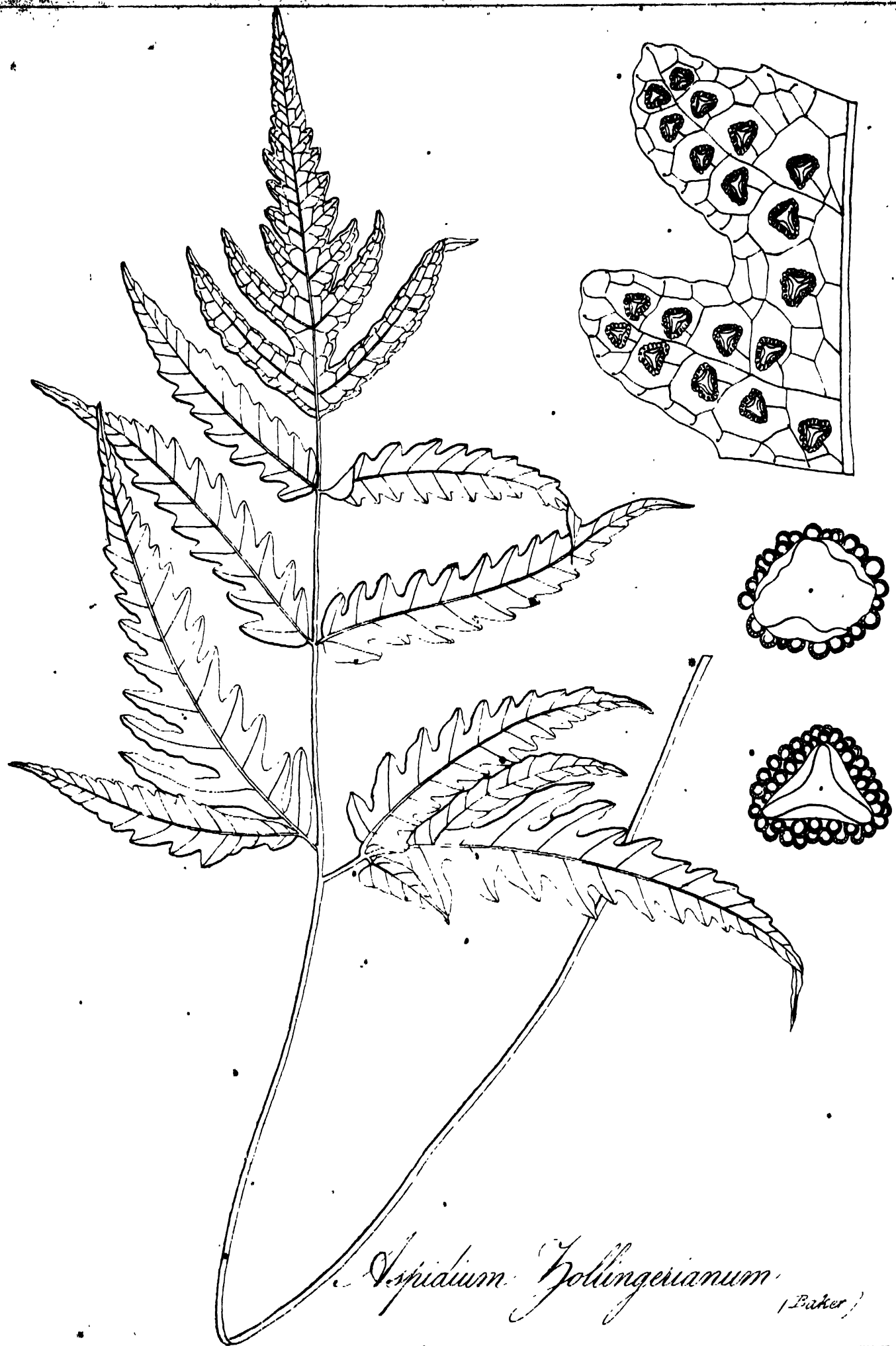
ASPIDIUM.

ASPIDIUM ZOLLINGERIANUM. (Baker.) Caudex? stipites 6-10 inches long and as well as the rachis stramineous, fronds broadly ovate scarcely acuminate 6-10 inches long subcoriaceous-membranaceous subbi-below tripinnate, primary pinnae 5-7 obliquely ovate acuminate, but obtuse in distant pairs long-petioled 2-4 inches long deeply and irregularly pinnatifid below pinnate, lowest pair at the base subpinnate, segments or ultimate pinnae oblong obtuse sinuato-lobate at the margin, veins prominent anastomosing unto suborbicular large areoles not more than two series in each segment, these are so depressed as to form a cavity (pustuled on the upper surface) and each areolar cavity is occupied by a rather large sorus attached to the apex of a free veinlet, involucre rather large with a broad membranaceous margin orbicular and subpeltate. *Baker Syn. Fil. Aspidium immersum. Hook. Sp. Fil. iv. 58; Phlebigonium impressum Griseb. Pl. Ind. n. 34;—Fée Gen. Fil. p. 314. t. 24. A f. 2;—Aspidium an trifoliatum. Sw. (Wall. M. S.)*

The specimen figured is from Tenasserim.

Hab. Tenasserim.

PLATE No. CCLI.



Aspidium Zollingerianum
(Baker)

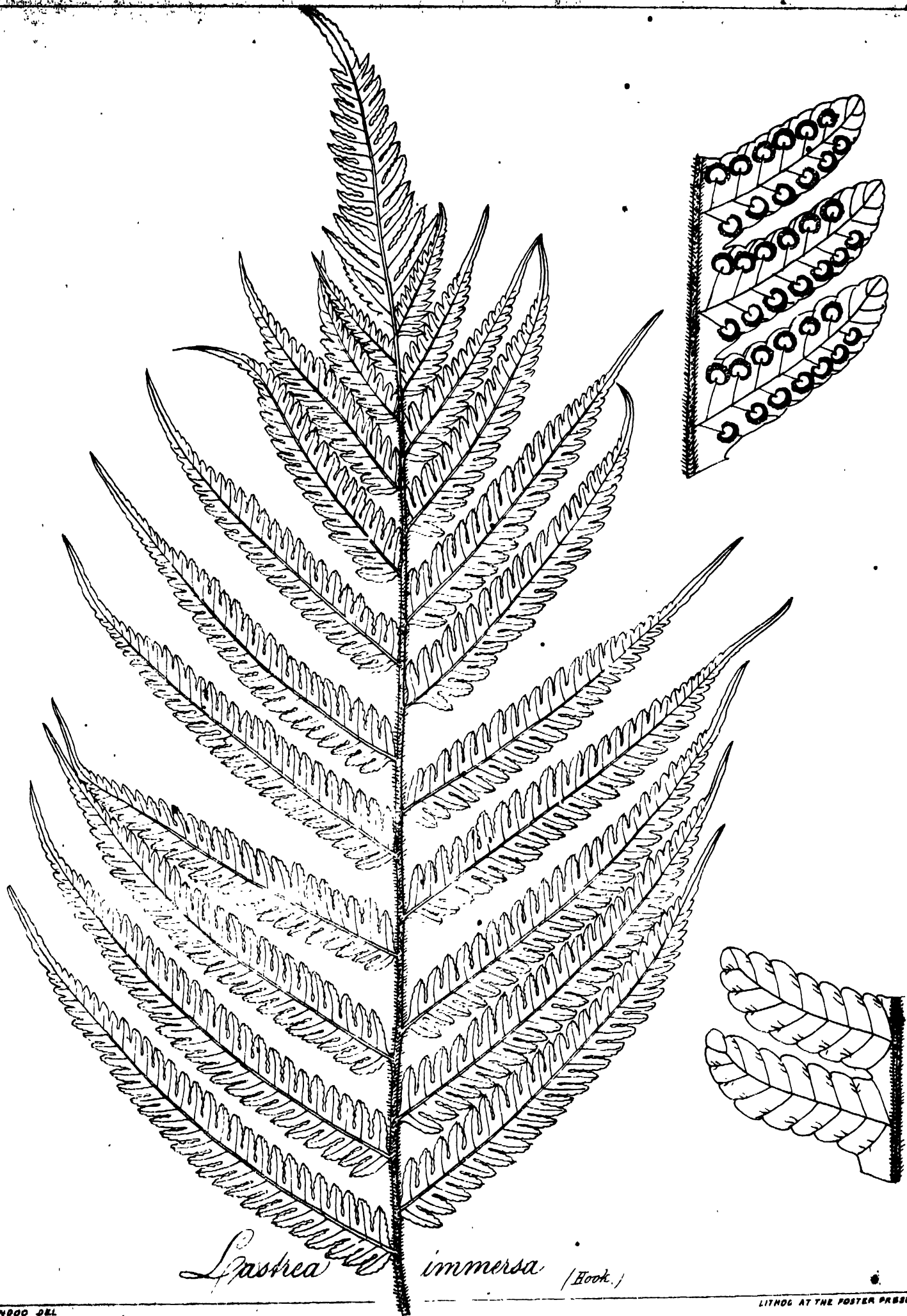
LASTREA.

LASTREA IMMERSA. (Hook.) Caudex creeping stipes elongated 3-4 feet long, fronds glabrous or finely pubescent with scattered glands beneath from a broad base ovato-oblong or oblong acuminate pinnate, pinnæ 8-10 inches long sessile with a swelling round the base of the pinnæ (articulated ?) linear attenuated at each extremity long acuminate at the apex deeply pinnatifid, segments linear-oblong entire obtuse, sori immersed arranged between the costule and the margin of the segments, involucre reniform glabrous entire persistent. *Hook. Sp. Fil.* iv. 112.—*Metten. Fil. Hort. Lips.* p. 91. t. 18. f. 1-3 ;—*Aspidium. Bl. En. Fil.* p. 156 ;—*A. impressum* (ex errore) *Kze. in Linnæa* xxiii. p. 227 ; *Lastrea verrucosa. J. Sm. in Hook. Bot. Journ.* iii. p. 411 ;—*Pr. Epim.* p. 36.

The specimen figured is from Assam—(Griffith).

Hab. Assam, Java, Luzon, Johanna Island, East coast of Tropical Africa.

PLATE No. CCLII.

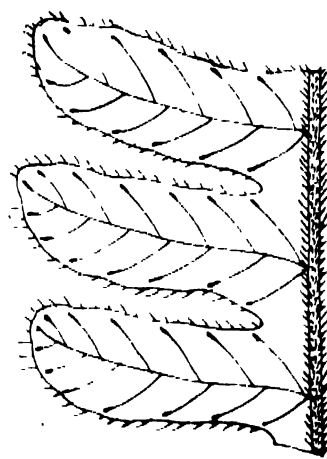
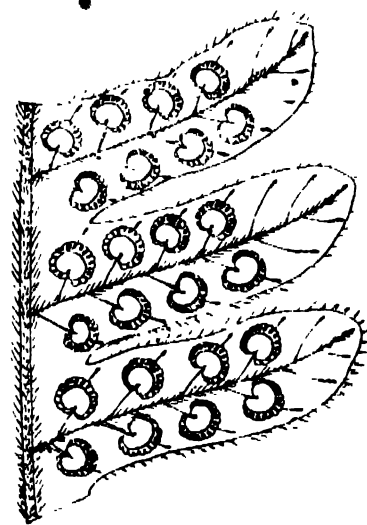
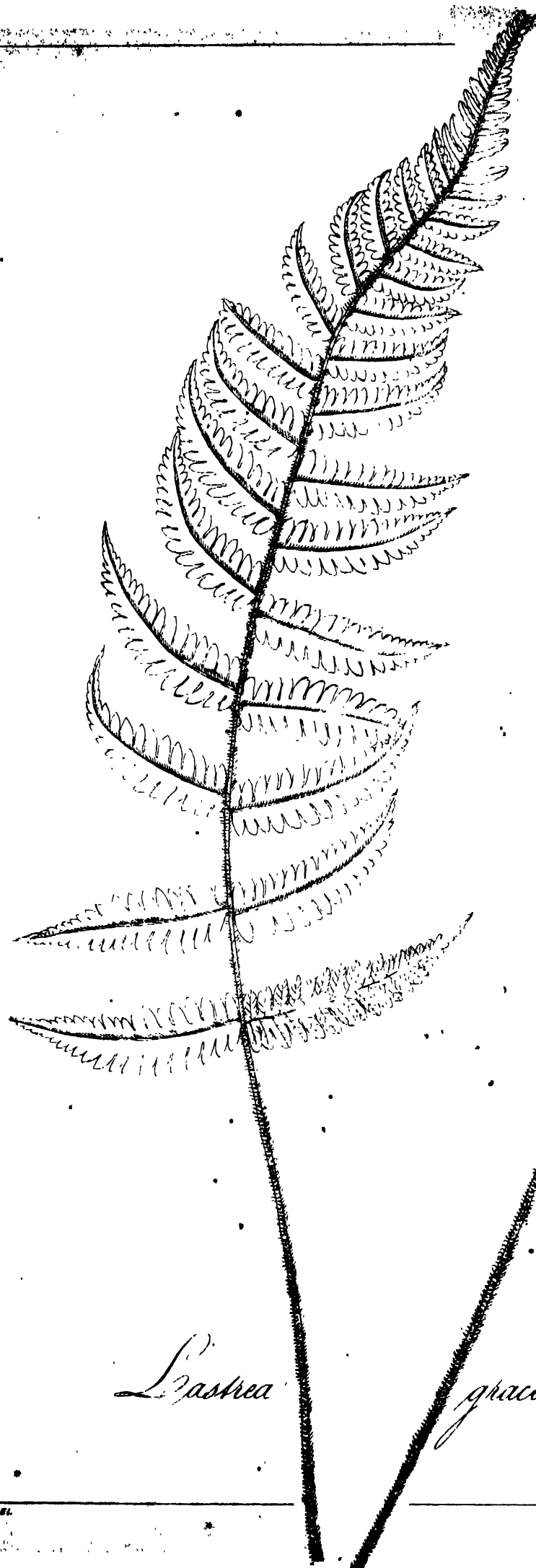


Lactuca immersa (Hook.)

LASTREA.

LASTREA GRACILESCENS. (Hook.) The plant figured at Pl. CX. of the Ferns of Southern India as *Lastrea caracilascens* is now separated from that species by Mr. Baker, and has been named *L. Beddomei* (Baker): the accompanying plate is a figure of the true *caracilascens* from the Himalayan Mountains, the lower pinnæ are not reduced in size, the rachis of both frond and pinnæ and the costa of the pinnules (or segments) beneath, are thickly furnished with short hairs, and the margins are more or less ciliated,* the fronds are otherwise glabrous on both sides, and are membranaceous in texture.

PLATE No. CCLIII.



Lastrea gracilescens

Hook

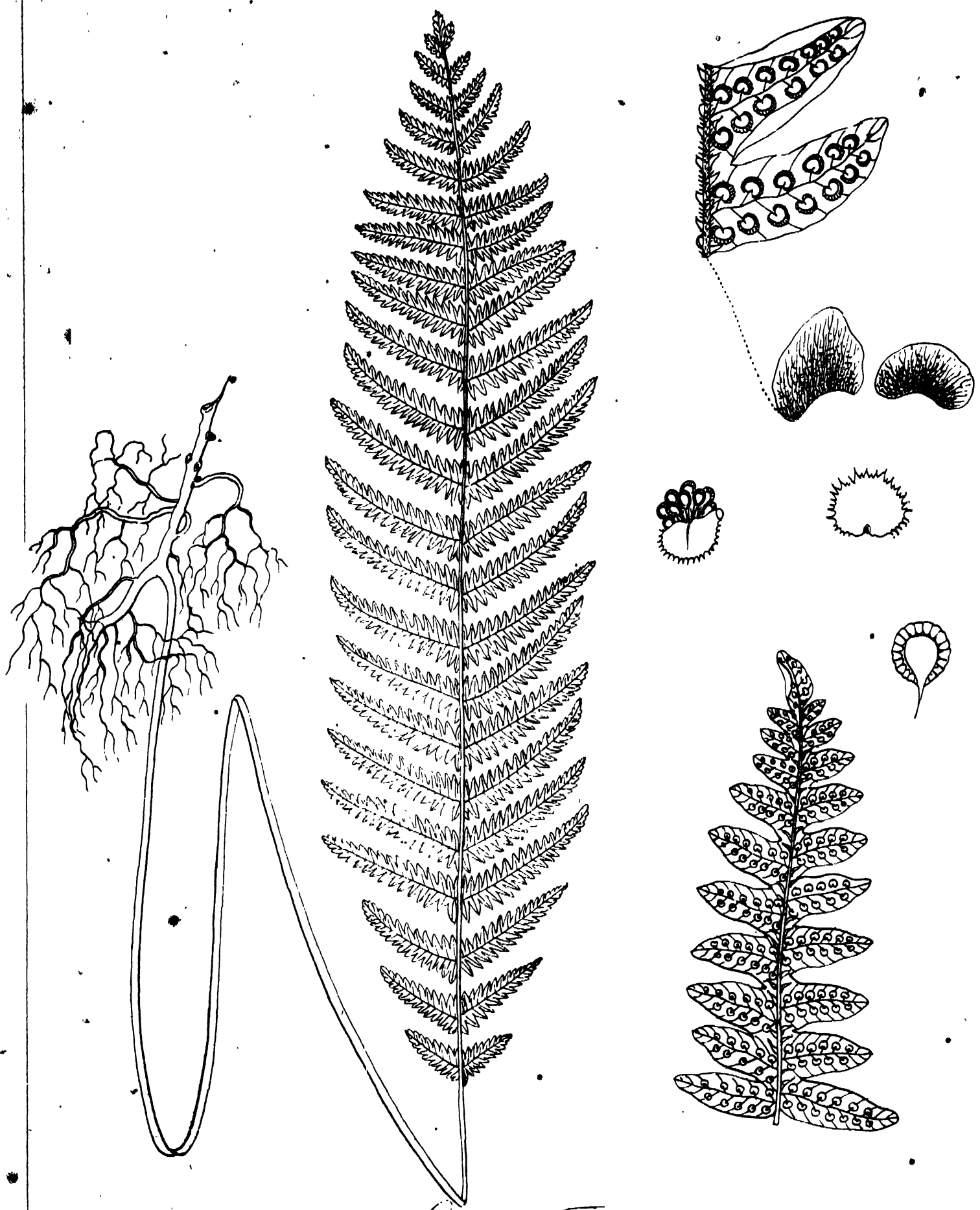
LASTREA.

LASTREA FAIRBANKII. (Bedd.) Caudex long creeping as thick as a crow quill very black glabrous, but furnished with a few scales, copiously rooting—stipes 8-20 inches long stramineous, black at the base, rachis channelled above glabrous or slightly pubescent with weak glandular hairs, fronds coriaceous 6-10 inches or more long narrow oblong pinnated, pinnæ opposite or alternate, sessile or nearly so, 1—1½ inches long, less than ½ an inch broad, linear obtuse or acuminate at the apex, pinnatifid nearly to the rachis, the lower ones reduced in size and often more distant, rachis channelled and glabrous on the upper side, slightly pubescent or glabrous beneath and there furnished with numerous broad-ovate or lunate very transparent scales, segments oblong to ovate entire much recurved at the margins, veins more or less undulate, veinlets all simple not forked excurrent at the margin, sori one on the centre of each veinlet, involucre reniform, fimbriate at the margin.

I have named this species after Mr. Fairbank of the American Mission, who first pointed it out to me on the Pulney Mountains, where it seems to be very rare (and it has been not found elsewhere though it probably occurs on the Anamallays and Nilgiris), it is nearly allied to *L. Thelypteris*, and I am not sure that it is not a variety of that species, the texture however is very coriaceous, and if a variety of *Thelypteris*, it is very distinct from any of the European or Himalayan forms in my Herbarium.

Hab. Pulney Mountains—4000 feet and upwards—(in Swamps.)

PLATE No. CCLIV.



Lastrea Fairbankii. (Bedd.)

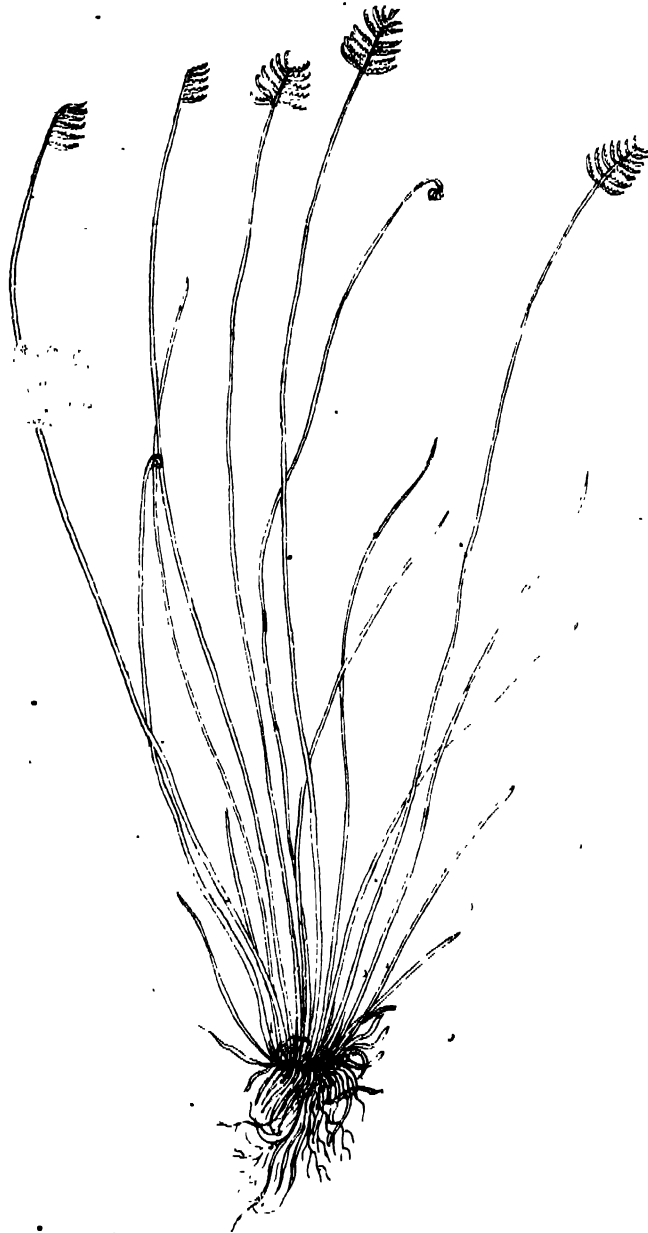
SCHIZÆA.

SCHIZÆA MALACCANA. (Baker.) Stipes dense not distinguishable from the frond, which is 4-8 inch long, weak, flexuose, subterete, channelled in front not more than 1-6 line thick, the barren and fertile ones similar; fertile segment erect often bilateral $\frac{1}{2}$ inch deep with 3-6 slender spreading spikes on each side, the lowest 2-2 $\frac{1}{2}$ lines long. *Baker Syn. Fil. inedit.* *S. propinqua Presl. Suppl. Tent. Pterid. p. 74 in part.*

The specimen figured is from Moulmein—(Lobb.)

Hab. Moulmein, on Mount Gedé 3500 feet, Malacca, Phillippine Islands, Borneo.

PLATE No. OCLV.



Schizaea Malaccana.

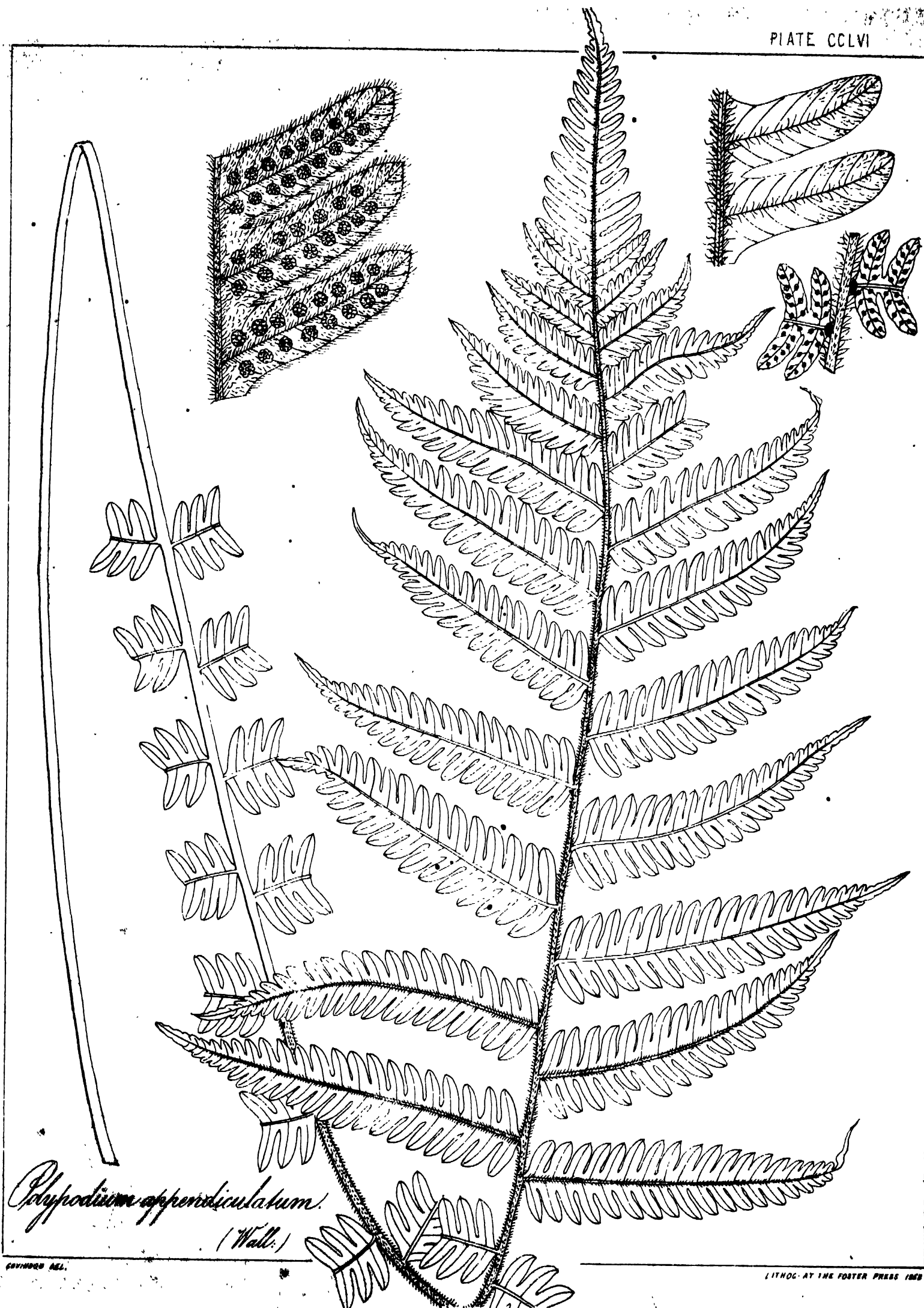
(Baker.)

POLYPODIUM.

POLYPODIUM APPENDICULATUM. (Wall.) Caudex? stipes about 1 foot long pubescenti-pilose, fronds 1-2 feet long, 6-8 inches broad pinnate, pinnæ alternate, membranaceous, sessile or subsessile with a small gland at the base beneath, patent. 3-4 inches long, $\frac{3}{4}$ to 1 inch broad, gradually diminishing in size towards the apex and ending in a long acumination, pinnatifid nearly to the rachis, segments approximated with narrow sinuses, linear oblong entire or slightly crenated, obtuse at the apex, costa and costules setose above, pubescenti pilose beneath, rachis setose and pubescenti-pilose, veins 8-9 pair on each side, all simple not forked scarcely touching the margin, the lower pair with their apex above the base of the sinus, sori one to each vein a little below the centre.

The specimen figured is from Nepal (Winterbotham), it is intermediate between *P. erubescens* and *auriculatum*.

PLATE No. CCLVI.



Polypodium appendiculatum
(Wall.)

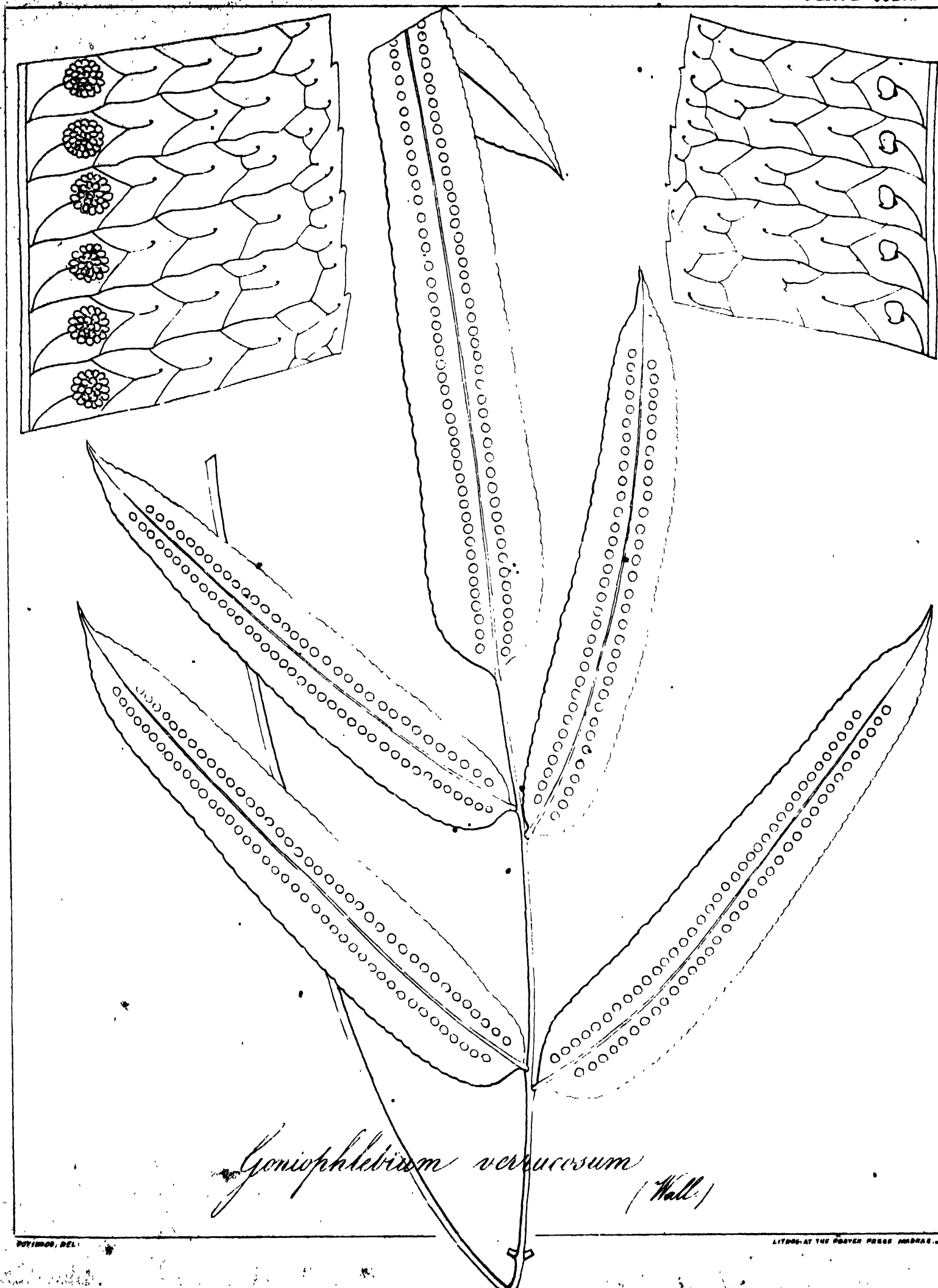
GONIOPHLEBIUM.

GONIOPHLEBIUM VERRUCOSUM. (Wall.), caudex long stout creeping, very paleaceous, stipites $1\frac{1}{2}$ foot and more long, fronds 2-3 feet long oblongo-acuminate firm-membranaceous drooping, pinnæ numerous but distant, 6-9 inches long $1-1\frac{1}{2}$ inch broad, oblong costate articulate upon the rachis suddenly and shortly cuspidato-acuminate entire or serrated chiefly towards the apex nearly sessile, the base obliquely cuneate, primary veins slender but straight and parallel costuliform, forming with the anastomosing veins four or five series of areoles each with a free included veinlet, but of which the lowest series only is soriferous, sori in a single series next the costa sunk in a deep cavity having a corresponding pustule on the upper side, capsules long stipitate mixed with paraphyses. *Hook. Sp. Fil.* v. 31. *Wall. Cat.* n. 296. *Metten. Polyp.* p. 81. *Hook. Gard. Ferns*, t. 41, — *Marguaria*, *Hook. Gen. Fil.* t. 10. B. ; — *Goniophlebium*, *J. Sm. β* ; pubescenti-villous (Young).

The specimen figured is from Penang.

Hub. Penang, Singapore, Amboyna, Ceram, Java, Luzon.

PLATE No CCLVII.



Goniophlebium verrucosum (Hall.)

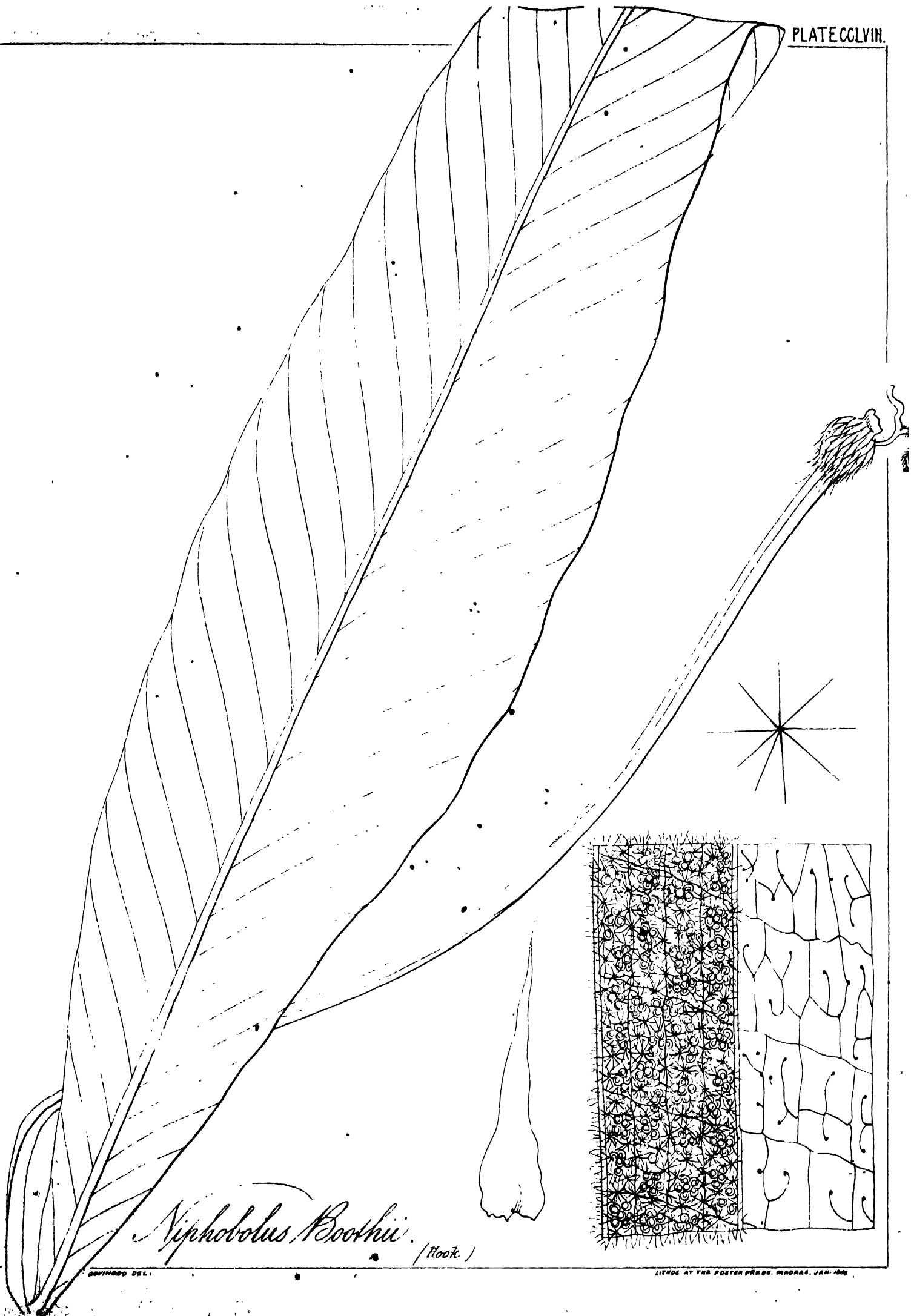
NIPHOBOLUS.

NIPHOBOLUS BOOTHII. (Hook.); caudex & stipes 16 inches long and stout in proportion, tawny-brown paleaceous with imbricating ferruginous lanceolate scales only at the very base, frond carnosio-coriaceous, 16-24 inches long 3-4 inches wide, elliptico-lanceolate obtusely acuminate, moderately attenuated glabrous and punctated above with minute blackish dots (probably corresponding with the receptacles of the sori), beneath covered with a dense velvety mass of ferruginous stellated tomentum, primary costular veins evident but not prominent united by transverse arched veins as in *Campyloneurum*, 10-12 series between the costules each including several free soriferous veinlets, sori small partially sunk in the tomentum forming transverse lines between the costules and as many as there are areoles. *Hook. Sp. Fil.* v. 53.

The specimen figured is from Bhotan.

Hab. Bhotan, Eastern Himalaya.

PLATE No. CCLVIII.



Niphobolus Boothii. (Hook.)

DOUGLASS DEL.

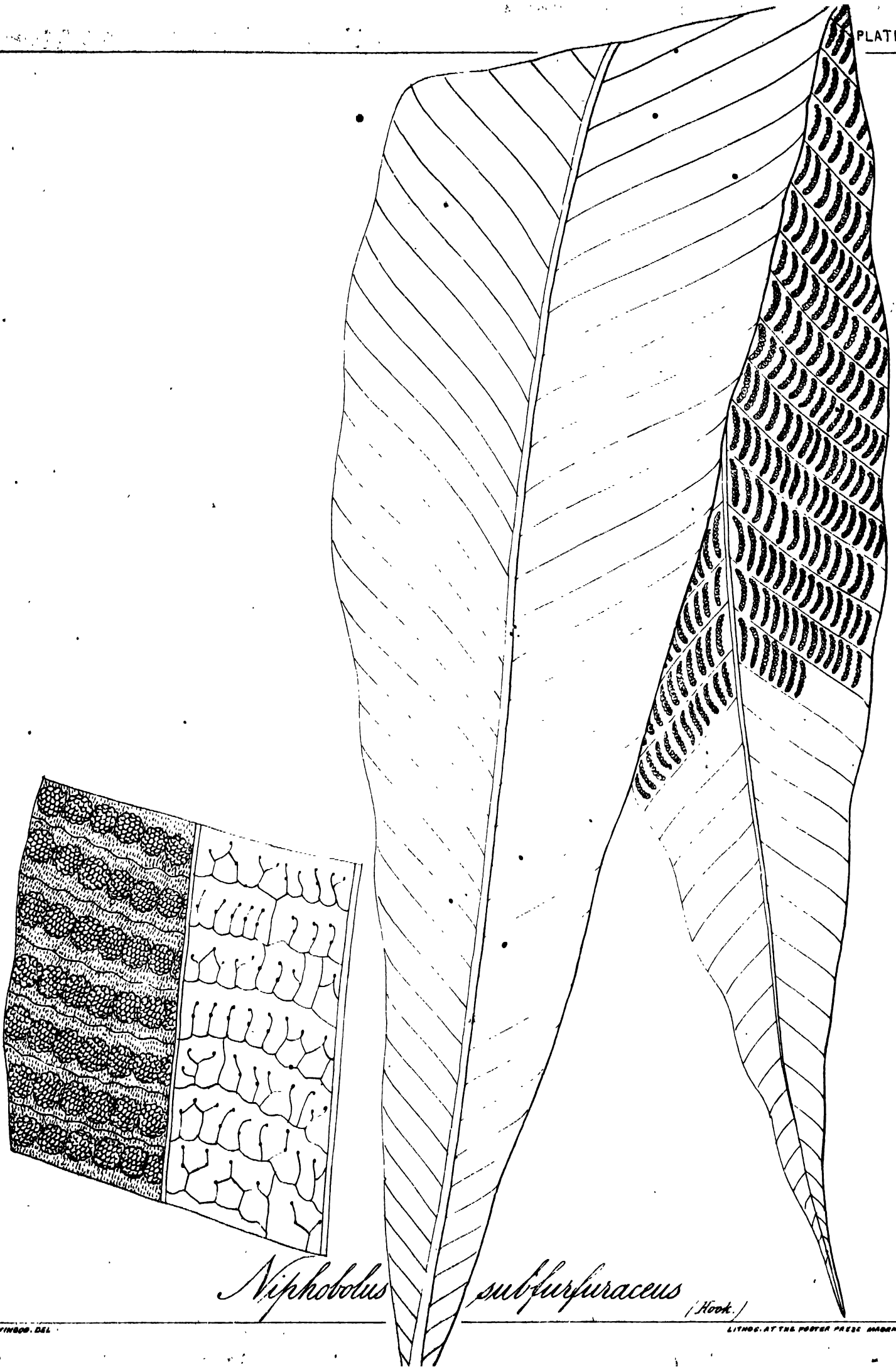
LITHO AT THE FOSTER PRESS, MADRAS, JAN. 1888

NIPHOBOLUS SUBFURFURACEOUS. (Hook.) ; caudex short branched creeping, the younger branches paleaceous with ferruginous subulate scales, stipites subaggregated, 4-5 inches long, fronds 24-30 inches long 4-5 inches wide, broad-lanceolate or oblanceolate sharply acuminate below, gradually and much attenuated upon the stipes, glabrous above, minutely stellato-tomentose beneath, the tomentum thin, firm and close so as to appear subfurfuraceous or compactly pannose of a whitish color, costa stout, costules evident but not elevated, venation indistinct quite that of true *Campyloneuron*, the areoles from 15-20 in a series between the costa and the margin each with numerous include free soriferous veinlets, sori rather small, most copious all over the back of the frond elevated subglobose (not in the least sunk) forming as many arched series between the costules as there are areoles. *Hook. Sp. Fil.* v. 52.

The specimen figured is from Bhotan.

Hab. Bhotan, Mishmee.

PLATE No. CCLIX.



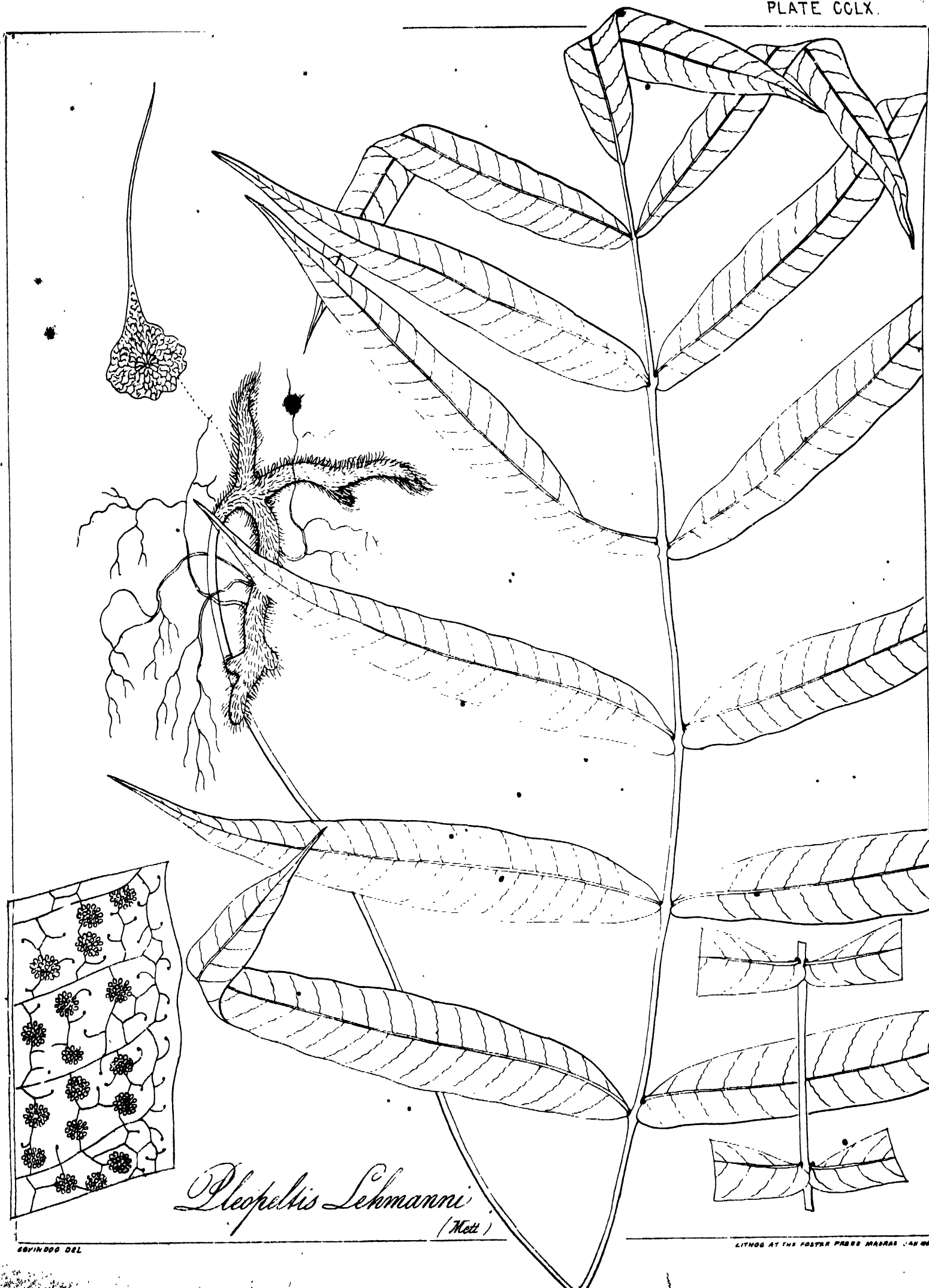
Niphobolus subfuraceus (Hook.)

PLEOPELTIS.

PLEOPELTIS LEHMANNI. (Mett.) Caudex stout, creeping clothed with ovate or orbicular glabrous scales each ending in a very long acumination, stipes 8 inches or more long, glabrous as well as the rachis and frond, fronds $1\frac{1}{2}$ to 2 feet long coriaceous-submembranaceous pinnate, pinnæ opposite or subopposite sessile with a gland-like articulation at the base (terminal one long petioled) linear oblong entire with a caudate acumination 4-6 inches long about $\frac{3}{4}$ of an inch broad, superior base obliquely excised, inferior base amplexicaule, costules evident not extending quite to the margin connected by the transverse veins which form about 4 series of areoles in which are free simple or forked veinlets with clavate apices, sori irregular, generally 4 to 6 in two rows between the costules. *Mett. Poly. p. 229.*

The specimen figured is from Darjeeling. It is nearly allied to *P. Moulmeinensis*, Pl. No. CCV. of this work which Mr. Baker informs me is *P. juglandifolium* (Don.) This latter name Sir W. Hooker gives as a synonym to *P. capitellata*, Wallich, but he does not appear to describe the present species.

PLATE No. CCLX.



Pleopeltis Lehmanni
(Mett.)

LASTREA.

LASTREA CONIIFOLIA. (Wall.) At page 36 and Plate CI. of the Ferns of Southern India, I followed Sir W. Hooker in considering this species only a more compound variety of *L. aristata*. (Sw.) Mr. Thwaites lately drew my attention to the fact that the two ferns are quite distinct, this having an erect caudex and *aristata* a long creeping one; they are otherwise very similar, but *coniifolia* is much the larger and is more compound, individuals of each species differ much in the manner in which they are cut. I have given in this plate a pinna of a more than usually cut variety of *coniifolia* (from the Sispara ghaut, Nilgiris) and the erect caudex of a juvenile specimen. I have also represented the creeping caudex of *aristata*. Both ferns are common in all our western forests.

PLATE No. CCLXI.



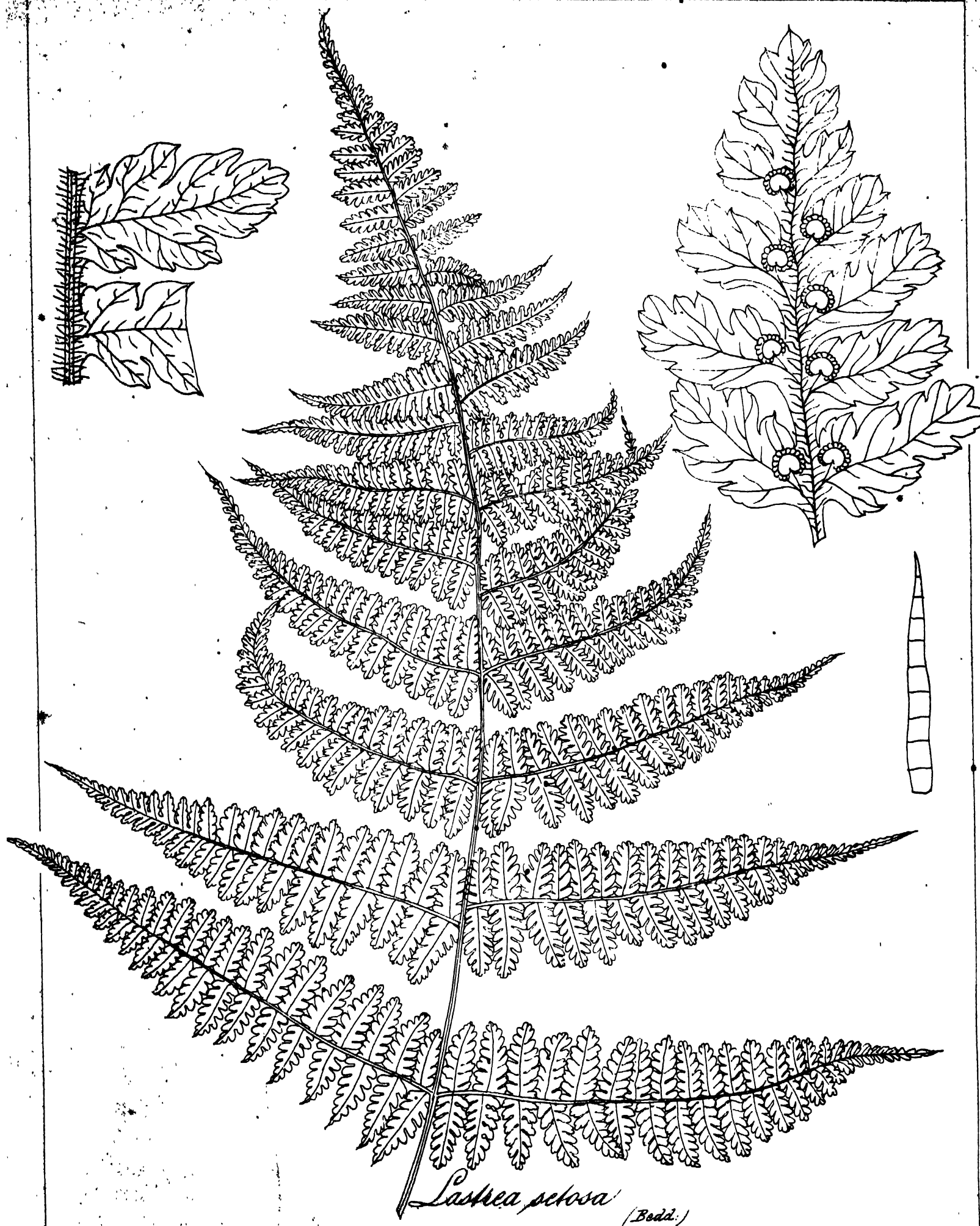
Laskea coniofolia (Wall.)

LASTREA.

LASTREA SETOSA. (Bedd.) Caudex erect, stipes 1 foot long, sparsely covered with small flaccid subulate light-brown scales, fronds tufted 3-3½ feet long, tripinnate, pinnæ 8-10 inches long, lowest pair nearly as long as the central ones, gradually decreasing in size towards the apex, pinnules pinnatifid to nearly the rachis but always more or less connected by a decurrent wing, very membranaceous and flaccid, and furnished on both sides sparsely (as is the rachis and costa) with long weak pellucid jointed setæ, segments of the pinnules generally as broad at the apex as at the base more or less pinnatifid with the lobes obtusely rounded or variously toothed, veins forked and simple reaching the margin, sori one to each segment medial on the lower vein involucre reniform glabrous.

Hab. Moulmein Mountains 6,000 feet elevation (Parish, No. 175), a very delicate and beautiful species nearly allied to *Lastrea scabrosa* (Kze.) and to *L. Blumei* and *recedens* (Hook.)

PLATE No. CCLXII.



Lastrea setosa (Bedd.)

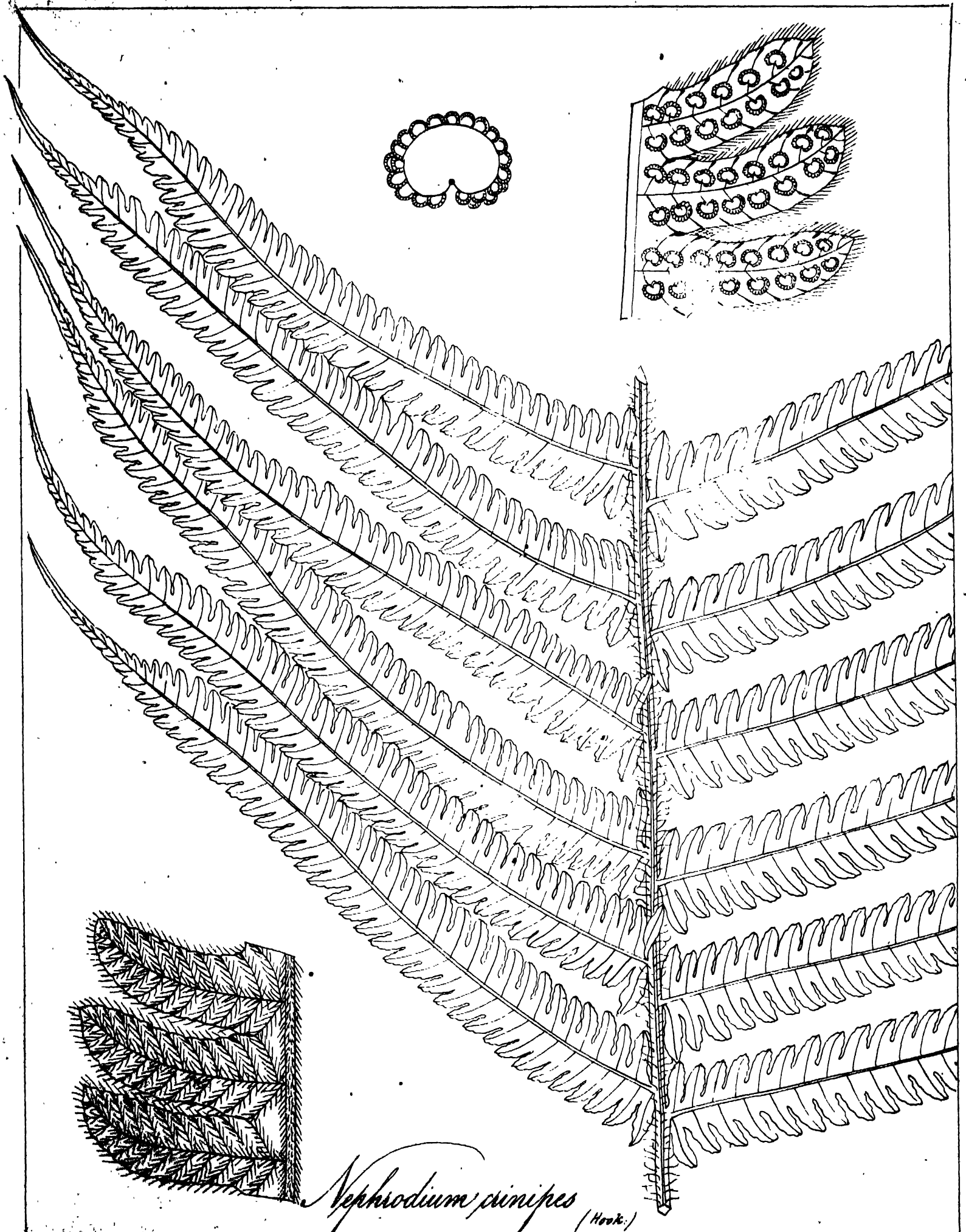
NEPHRODIUM.

NEPHRODIUM CRINIPES. (Hook.); stipes nearly 1 foot long and as well as the rachis stout and singularly erect and stiff stramineous, the former shaggy with copious long spreading flexuose subulate dark-brown scales which extend some way up the rachis, frond more than 2 feet long, submembranaceous quite glabrous from a broad base oblong-acuminate copiously pinnated, pinnae 5-6 inches long less than $\frac{1}{2}$ an inch broad, sessile horizontally patent from a broad base linear-oblong, finely acuminate pinnatifid more than half way down to the rachis with oblong subfalcate obtuse entire segments, lowest segments a little longer than the rest, lowest pair of veinlets united, sori on all the veinlets and on nearly every pinnae, large cordato reniform very membranaceous. *Hook. Sp. Fil.* iv. 71.

The specimen figured is from Sikkim-Himalaya (alt. 1000 ft.)

Hab. Sikkim-Himalaya.

PLATE No. CCLXIII.

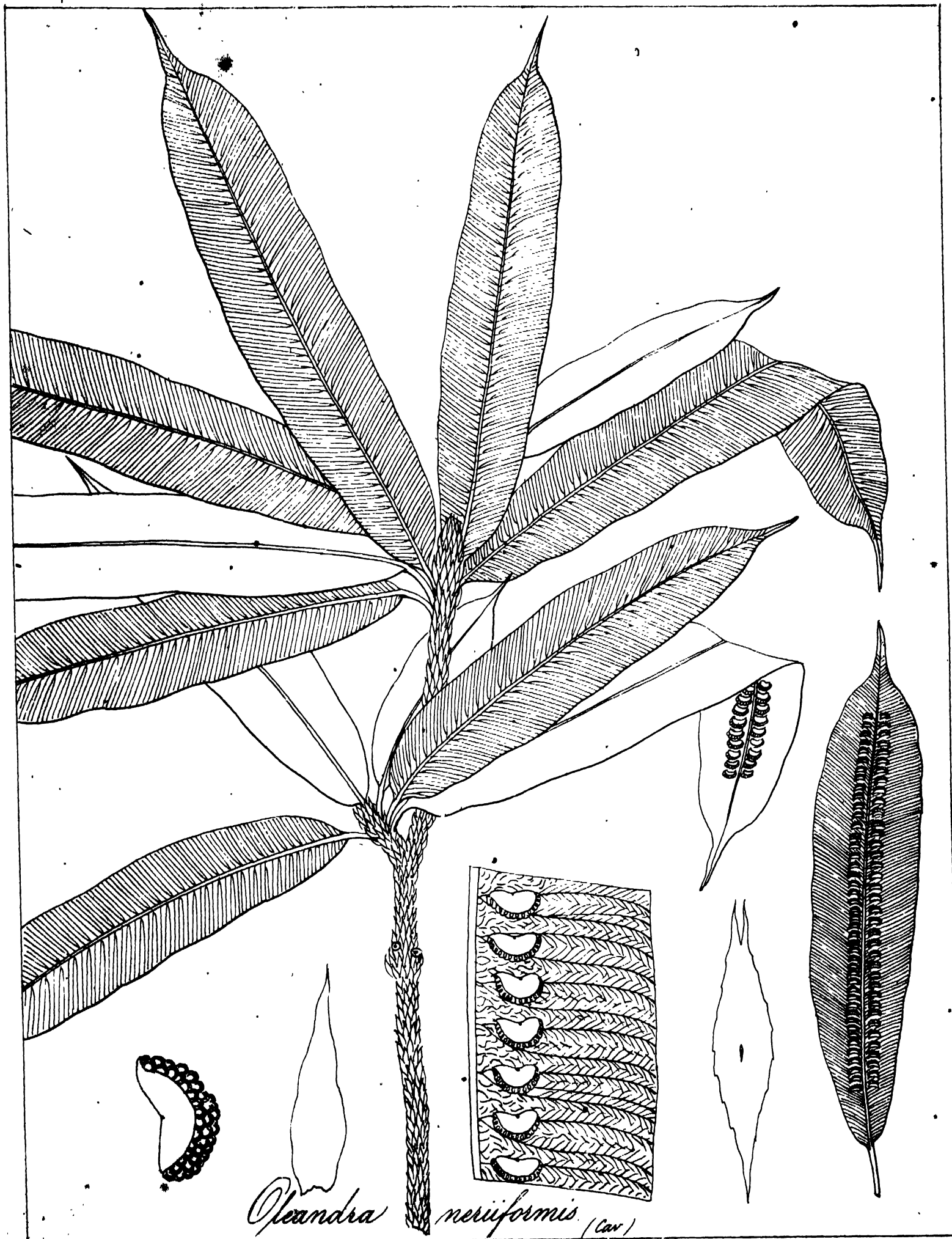


Nephrodium pinipes (Hook.)

OLEANDRA.

OLEANDRA NERIIFORMIS. (Cav.). The fern here figured is the true *O. neriiformis* (Cav.) and is from the Khasya Mountains—it has an erect woody stem, the species figured under this name at Pl. XCI of the Ferns of Southern India is *Oleandra musæfolia*, (Kunze.) and it has wide-trailing stems geniculate at the nodes. Sir W. Hooker does not describe this latter species, unless he has confounded it with *neriiformis*. *O. Musæfolia* is the only species found in South India and it is also abundant in Ceylon, but I do not know in what other localities ; the *neriiformis* has a very wide range, being found in South America, Africa, Java, and in the Himalayas, &c.

PLATE No. CCLXIV.



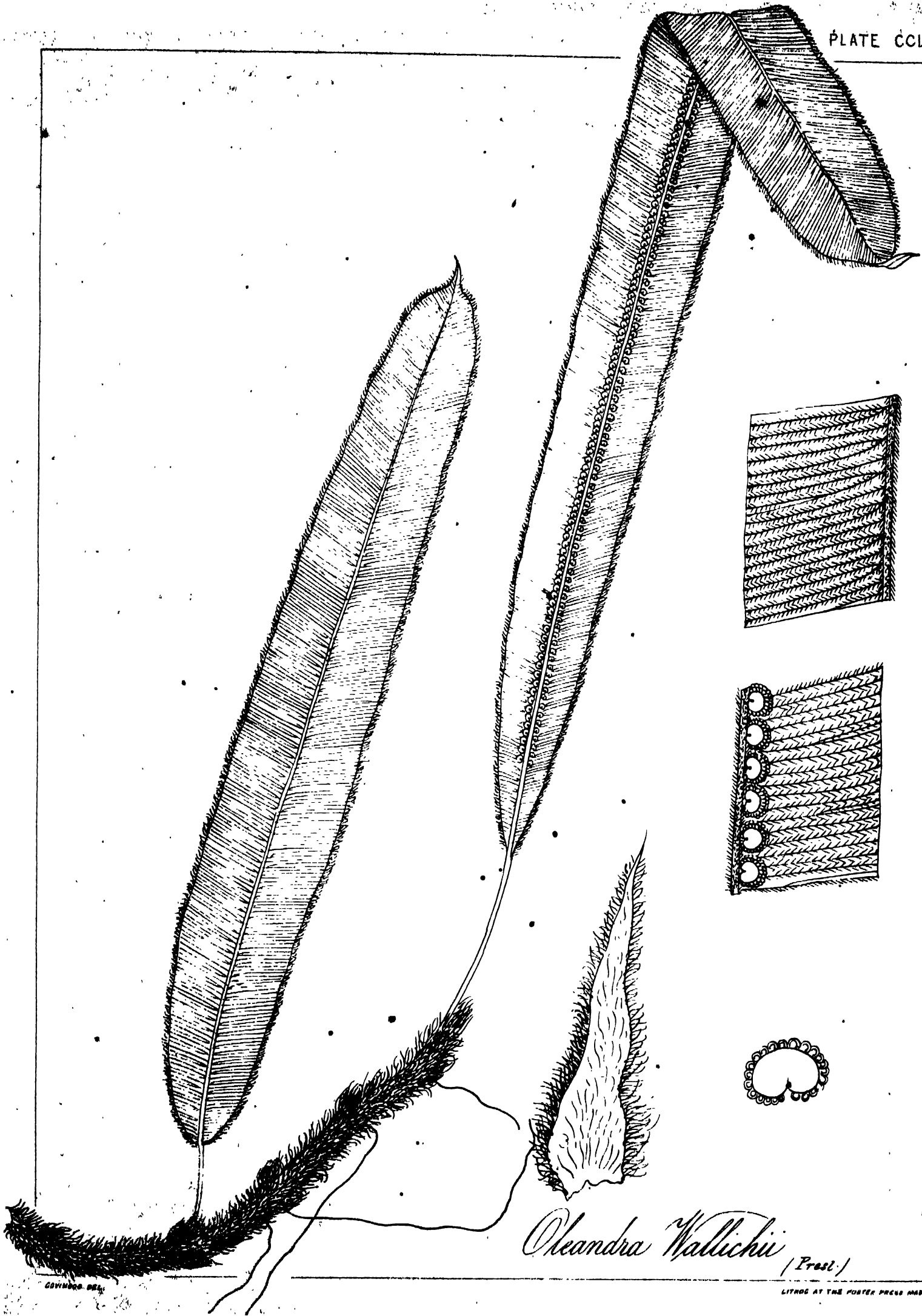
Oleandra neriiiformis (Cav.)

OLEANDRA WALLICHII. (Presl.); caudex creeping, rooting, branched thicker than a goose-quill, densely clothed with subulate crisped ferruginous, spreading and often reflexed scales thickly tufted at the extremity of the branches, stipites distant $\frac{1}{2}$ an inch to 2 inches long and sometimes paleaceous jointed close to the base so that the very short lower articulation is concealed among the scales, fronds 6-12-14 inches long membranaceous subpellucid opaque on the surface pilosulous subelliptical-oblong, the sides parallel, the base often obtuse and rounded, the apex suddenly and sharply acuminate, sori compact almost imbricated in a continuous line or chain close to and parallel with the costa on each side, involucre reniform ciliated opening towards the margin. *Hook. Sp. Fil.* iv. 158;—*Aspid. Wallichii.* *Hook. Ex. Fl.* i. p. 6. t. 5. *Kze. in Schk. Fil. Suppl.* p. 36. 19;—*Oleandra Wallichii, Tent. Pterid.* p. 78;—*Neuronia asplenioides, Don. Prodr. Fl. Nep.* p. 6.

The specimen figured is from Simla.

Hab. Nepal, North of India from Simla, and Kumaon in the West to Bhotan in the East, Assam, Khasya, Java ?

PLATE No. CCLXV.



Oleandra Wallichii (Presl.)

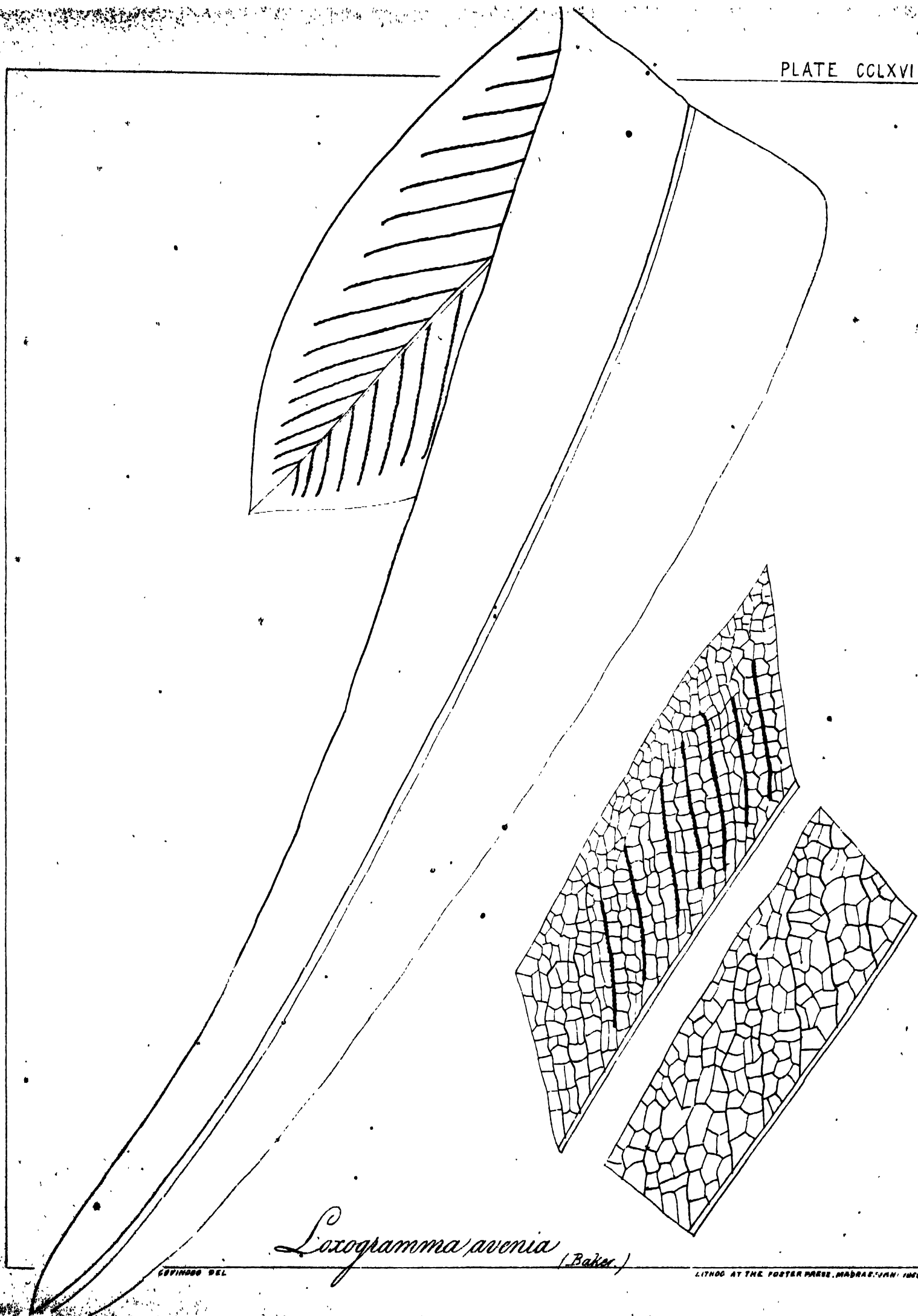
LOXOGRAMMA.

LOXOGRAMMA AVENIA. (Baker.) Caudex? Stipe about 1 inch long, fronds glabrous coriaceous, 18-20 inches long linear oblong spatulate broader upwards, but narrowed and acute at the apex about 3 inches wide in the widest part, glabrous on both sides, venation evident reticulated with free veinlets in some of the areoles, no prominent costules though the primary veins are slightly thicker than the others. Sori in narrow linear more or less flexuose, parallel lines in the upper portion of the frond not touching the costa nor extending to the margin.

The specimen figured is from Penang.

Hab. Malay Peninsula.

PLATE No. CCLXVI.



Loxogramma avenia (Baker.)

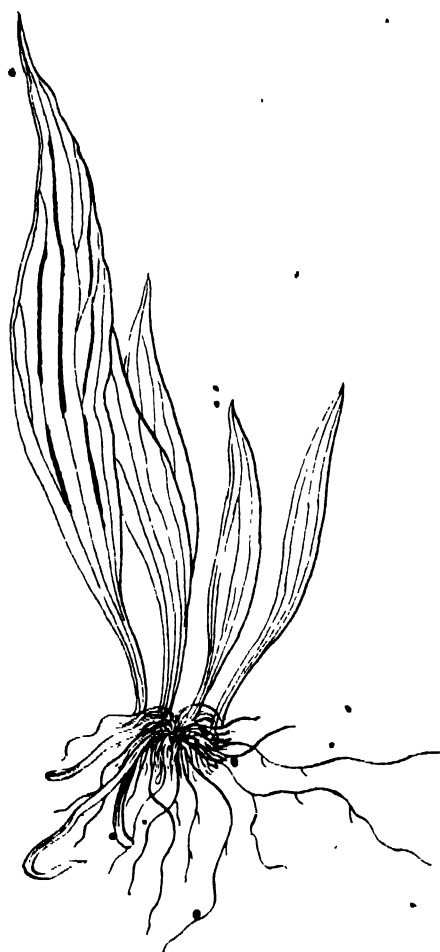
ANTROPHYUM.

ANTROPHYUM PARVULUM. (Blume.); "Fronds shortly stipitate lanceolate acuminate at both extremities, submembranaceous ecostate, sori nearly straight exposed (nudi)." *Hook. Sp. Fil.* v. 170. *Bl. Fil. Jav.* p. 78. t. 34. f. 3. *Excl. β . elongatum (not A. pumilum, Ktfs.)—Fée Antroph.* p. 45, in part (*Excl. Syn. Hemionitis immersa, Bory, and the locality of Bourbon.*)

The specimen figured is from Khasya (Dr. Hooker). It is nearly allied to *A. reticulatum*, if not a form of it.

Hab. Java, Penang, Tahiti, Khasya (4000 feet).

PLATE No. CCLXVII.



Antrophyum parvulum
(Pol.)

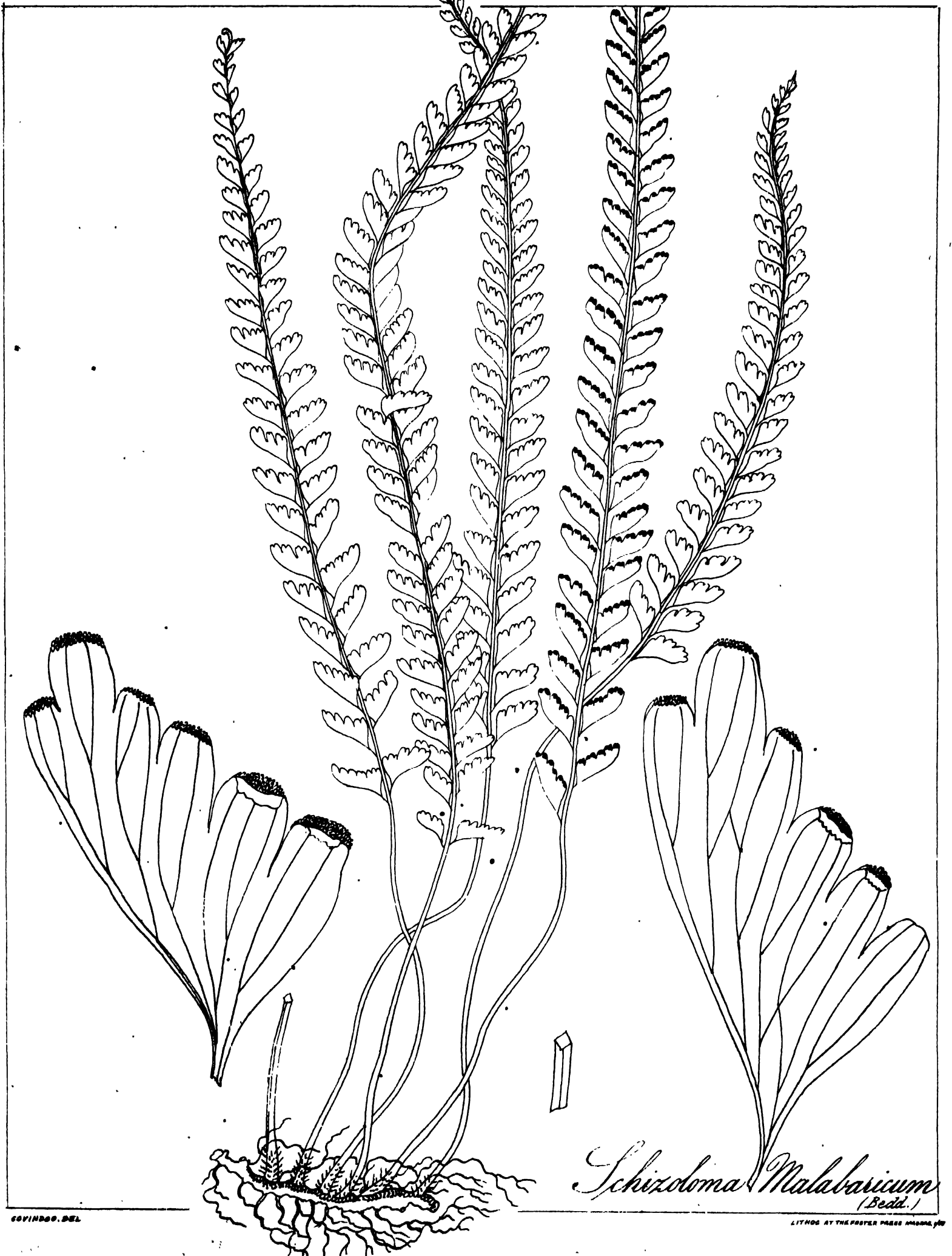
SCHIZOLOMA

SCHIZOLOMA MALABARICUM. (Bedd.) Caudex creeping, slightly scaly and furnished with thick wiry roots. Stipes tetragonous a third of the length to nearly as long as the frond, frond simply pinnated, pinnæ numerous alternate (decreasing in size towards the apex of the frond), membranaceous half ovate from a truncated base, narrow towards the apex, costa close to the lower margin, veins quite free or occasionally one or two anastomosing

I have long considered this a variety of *Schizoloma nitens* (Bl.) figured at Plate XXVII of the Ferns of Southern India (under Wallich's name *recurvatum*), I now feel certain that they are distinct species. I have found large beds of this in Wynnad and South Canara, and it is always simply pinnate and its pinnules are half ovate with almost a pointed apex, whereas *nitens* is generally bipinnate and its pinnules have a very broad apex and often form an exact parallelogram; the venation is besides different, in this species it is either quite free, or with only 1-2 veins anastomosing in each pinnæ; in *nitens* all or almost all the veins anastomose. In Plate XXVII. of Ferns of Southern India, the artist has omitted the costa or marginal vein which runs close to the lower margin of the frond and the veins are erroneously represented as springing from the margin of the frond.

Hab Malabar, South Canara

PLATE No. CCLXVIII.



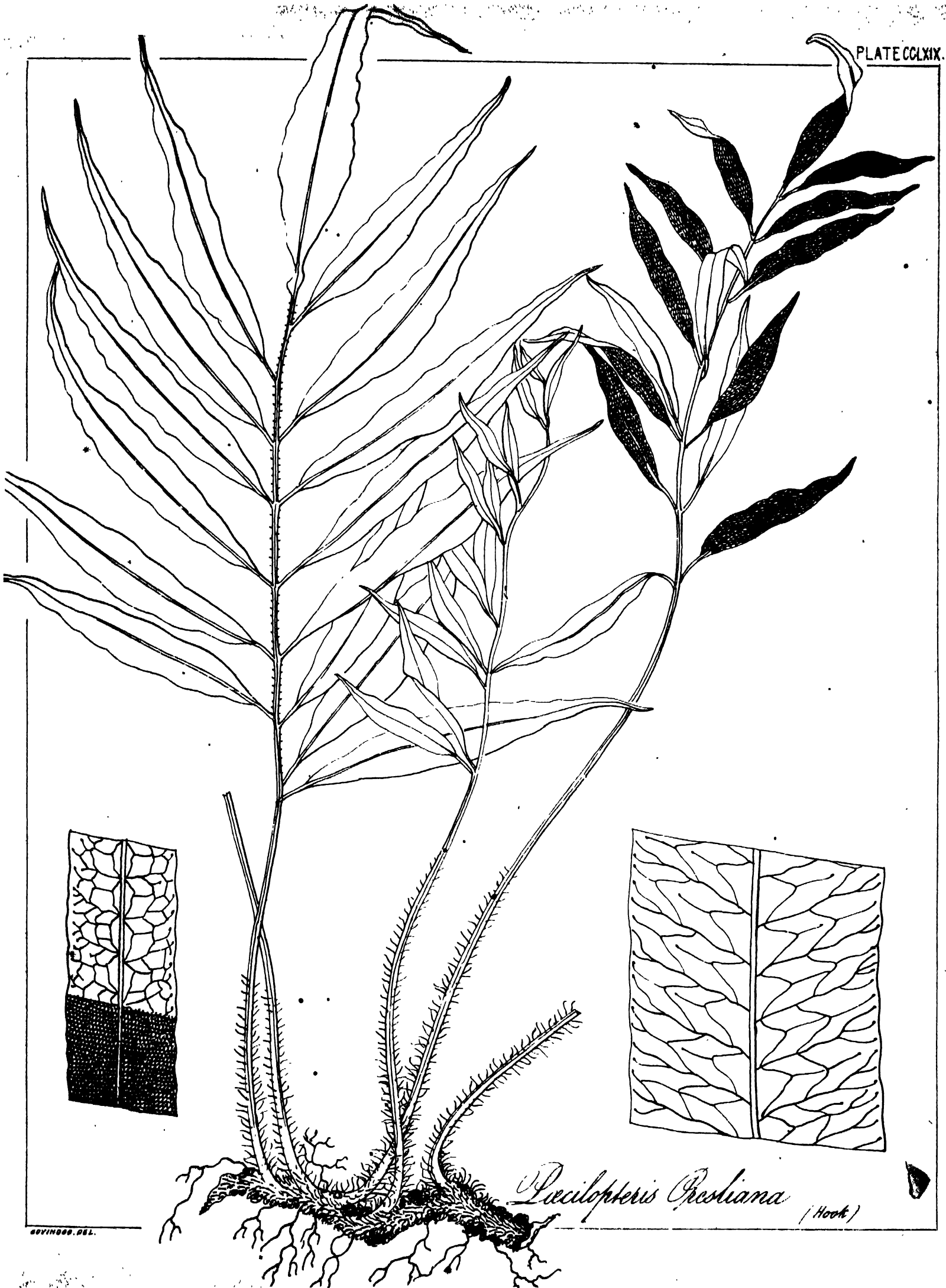
PÆCILOPTERIS.

PÆCILOPTERIS PRESLIANA. (Hook.) Caudex stout creeping paleaceous with narrow attenuated lanceolate scales, stipes 6-10 inches long, more or less scaly as is the rachis and petioles, fronds 6-12 inches long pinnated glabrous, pinnæ submembranaceous remote subopposite petiolate, 2-4 inches long $\frac{1}{2}$ an inch wide, narrow lanceolate acuminate at both ends, rachis more or less winged specially towards the apex of the frond; fertile fronds generally longer stipitate, pinnæ much contracted, wholly or sometimes only partially fertile, costules evident, connected by generally 2 pair of opposite veinlets which meet at an acute angle from which proceed a veinlet which is either free or joined to the veins above marginal veins free terminating in a dot within the margin. *Hook. Sp. Fil.* v. 265. *Heteroneuron, Fée Acrost. p. 92. t. 39. f. 1; —Acrostichum punctulatum, Pr. (not Sw.) Campium, Presl.*

The specimen figured is from Coorg, where I have only lately discovered it in great abundance on rocks in the bed of a river at the foot of the Bhagamundal ghat, just below Talle Cavery and at the confines of Malabar, Coorg and South Canara.

Hab. Coorg in rivers at the foot of the ghats (and probably in similar localities in Malabar and South Canara), Concan, (Law), Philippine Islands.

PLATE No. CCLXIX.

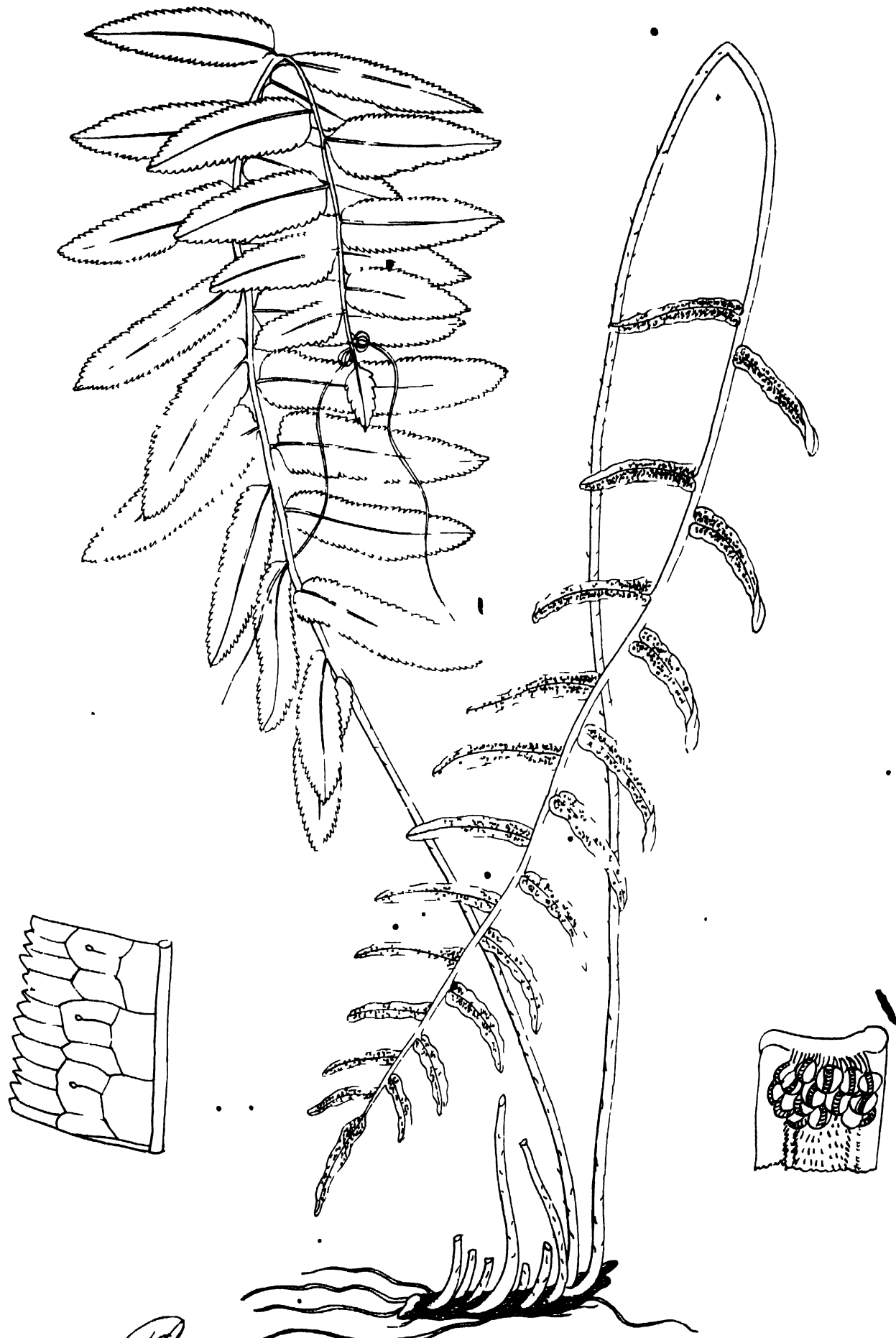


Pecilopteris Presliana (Hook.)

PÆCILOPTERIS.

PÆCILOPTERIS SEMICORDATA. (Baker) The fern here figured was drawn by Kew from a specimen collected by Mr. MacIvor on the Nilgiris, it is the "*Acrostichum virens*, variety *fuscatum*." Hook. 2nd Ferns, t. 87, but is not mentioned in *Species Filicum*, (at least separately from *virens*). I have never met with it unless it is (as I strongly suspect) only a form of the Fern figured at Plate CCII. of the Ferns of Southern India, as the *Pæcilopteris repanda* (J. Sm.), but which name should be altered to *Pæcilopteris contaminans* (Wall.) Sir W. Hooker unites this latter species the *contaminans* of Wall., with *ternimans* of the same botanist (Plate CCIII. of Ferns of Southern India) under the name of *virens*, they are however very distinct species.

PLATE No. CCLXX.



Paecilopteris semicordata
(Paka)

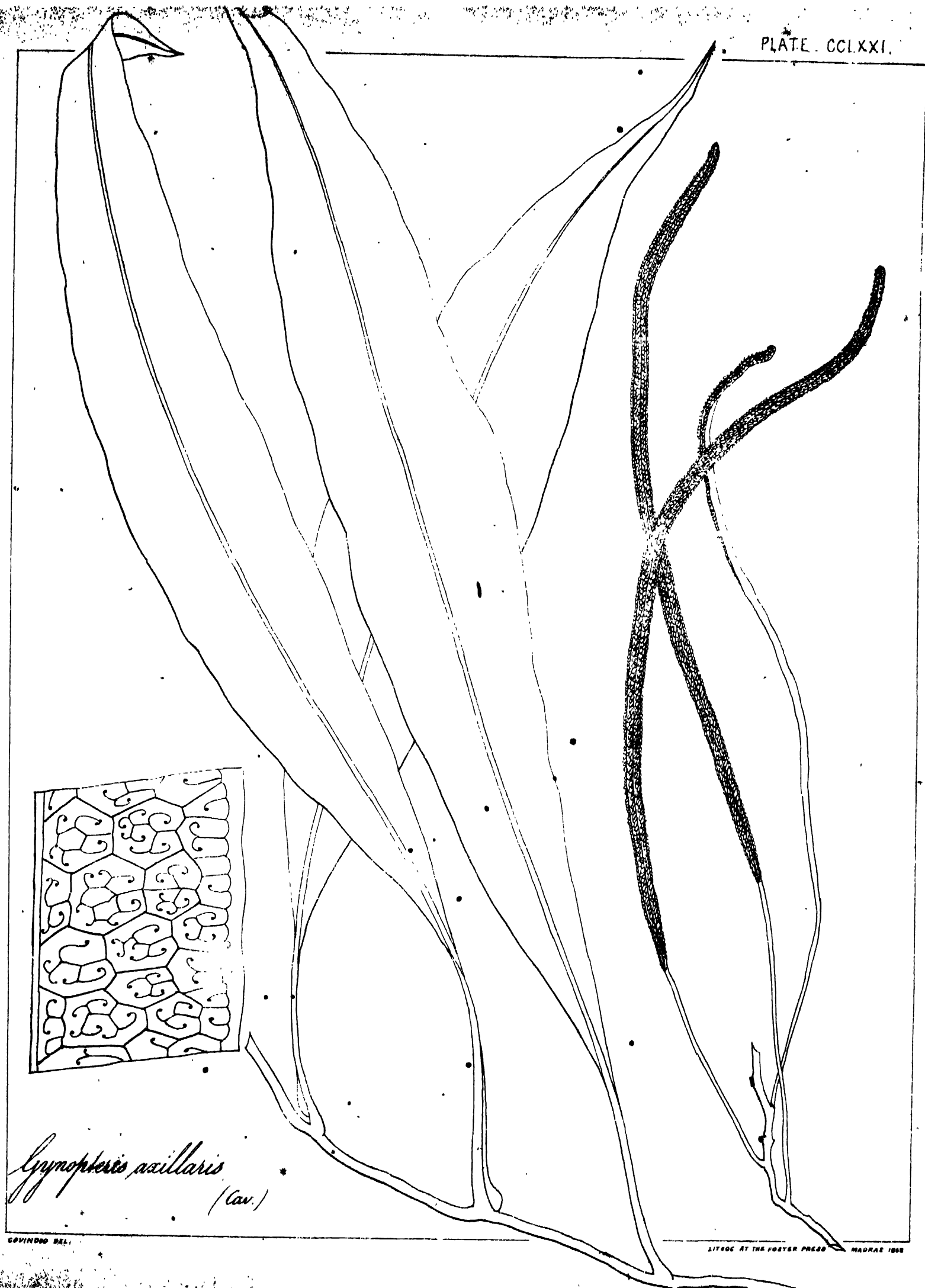
GYMNOPTERIS.

GYMNOPTERIS AXILLARIS. (Cav.) Caudex very long scandent flexuose here and there branched; sterile fronds rather distant (with very short stipites, almost none or 1-2 inches long and stramineous) membranaceous, 5-6 inches to 1 foot and more long, $\frac{1}{2}$ -1 $\frac{1}{2}$ inch wide, lanceolate more or less acuminate, strongly costate entire gradually tapering below and long-decurrent sometimes to the base of the stipes and even auricled there, fertile fronds (with stipites 3-4 inches long a little scaly at the base) 6 inches to a foot long, 1-3 lines wide linear tapering at both extremities flexuose. *Hook Sp. Fil.* v. 276. *Cav. Prolect.* 1801. n. 582.

The specimen figured is from South Canara, it is common in most forests on the Western side of India growing on trees. I have always looked upon as a mere variety of *G. Feei* (Plate XLVIII, Ferns of Southern India), but Sir W. Hooker thinks it a distinct species.

Hab. Western side of Madras Presidency, Ceylon, Bhootan, Assam, Sylhet, Burmah, Philippine Islands, Luzon, Java, Borneo.

PLATE No. CCLXXI.



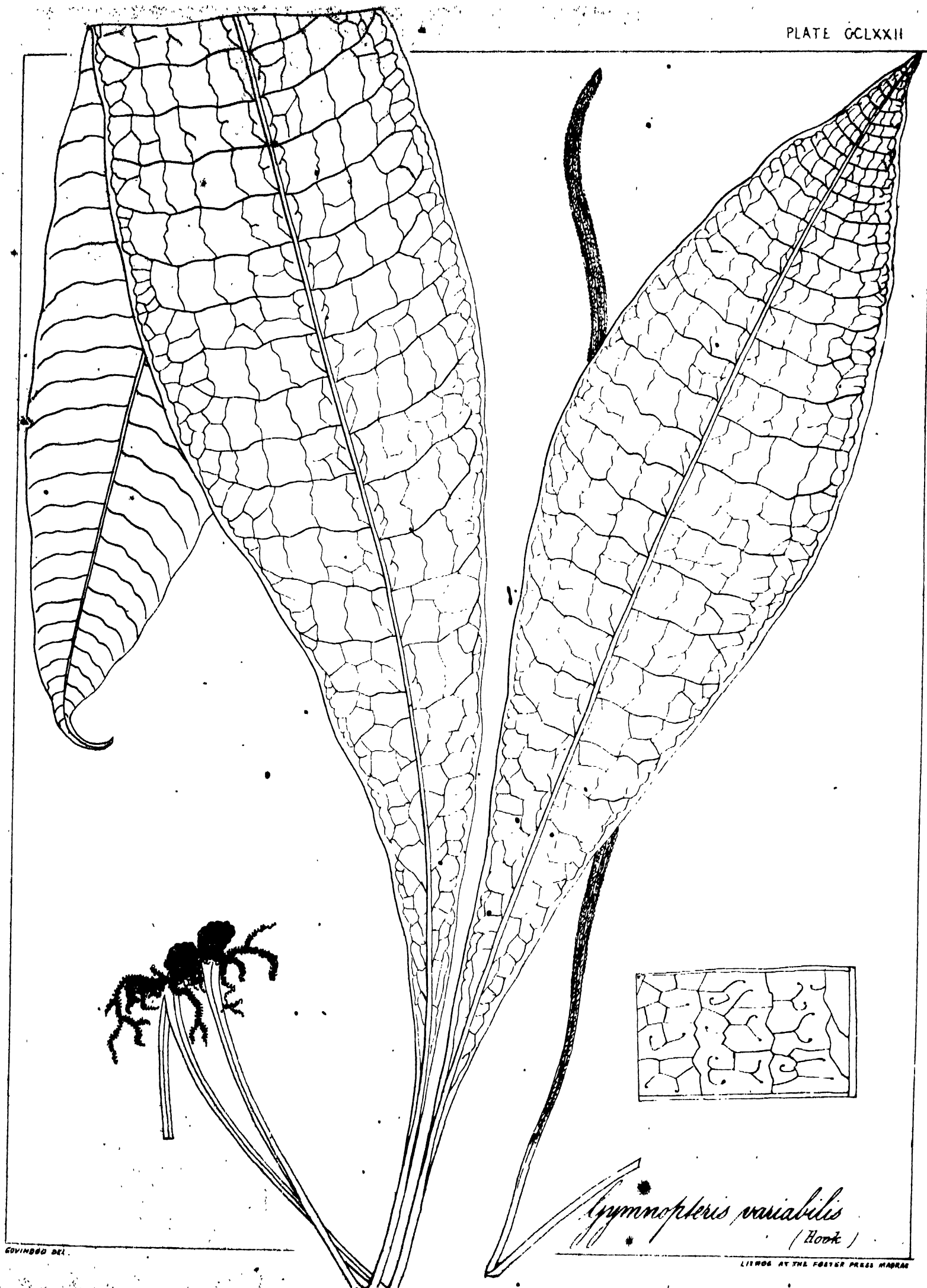
Lycopodium axillaris
(Lar.)

GYMNOPTERIS VARIABILIS. (Hook.) Caudex long creeping flexuose scarcely paleaceous, fronds distant; sterile one membranaceous, 6 inches to a foot and 14 inches long (including the decurrent base) 1-2½ inches wide broadly ovato-lanceolate costate acuminate below rather suddenly attenuated and very long decurrent upon the scaleless stipes sometimes almost to the base, the margin subrepand, costules very distinct subhorizontally patent, primary areoles large transversely oblong, secondary ones subquadrangular including free divaricating veinlets; fertile fronds narrow-linear often 6-10 inches long 2-3 lines wide on very long scaleless stipes often a foot long, sori continuous often spreading over the margin;—Hook. Sp. Fil. v. 277;—Gym. decurrens. Hook. Gard. Ferns. t. 6;—Acrostichum rivulare. Wall. Cat. n. 2165.

The specimen figured is from the Courtallum Forests, it differs from *G. Feei* in its very prominent costules. I have specimens from Birmah with the costules far more prominent and more regular than those in this figure, but I also have specimens nearly intermediate as to venation between true *Feei* and *variabilis*, and I have doubts about the two species being really distinct, the Courtallum plant is much more membranaceous in texture than *Feei* and the venation is very prominent. Sir W. Hooker refers the Ceylon pinnatifid variety of *Feei* (Plate CCXI. of Ferns of Southern India) to this species, but it has quite the venation of *Feei*, each segments of the frond has a costa (as in my three-lobed variety figured in the next plate), but there are no prominent costules.

Hab. Tinnevely forests 2—3,000 feet elevation, Assam, Khasya, Penang, Java.

PLATE No. CCLXXII.



COVINGB DEL.

Gymnocteris variabilis
(Hook.)

LITHO AT THE FOSTER PRESS MADRAS

GYMNOPTERIS.

GYMNOPTERIS FEEI, VAR. TRILOBATA.

This is a curious variety of the common G. Feei (Plate XLVIII of the Ferns of Southern India), I have only found it in the forests of Coorg and South Canara where it is abundant at an elevation of 2,000 to 3,000 feet, both sterile and fertile fronds are generally 3 lobed though they are sometimes simply lanceolate.

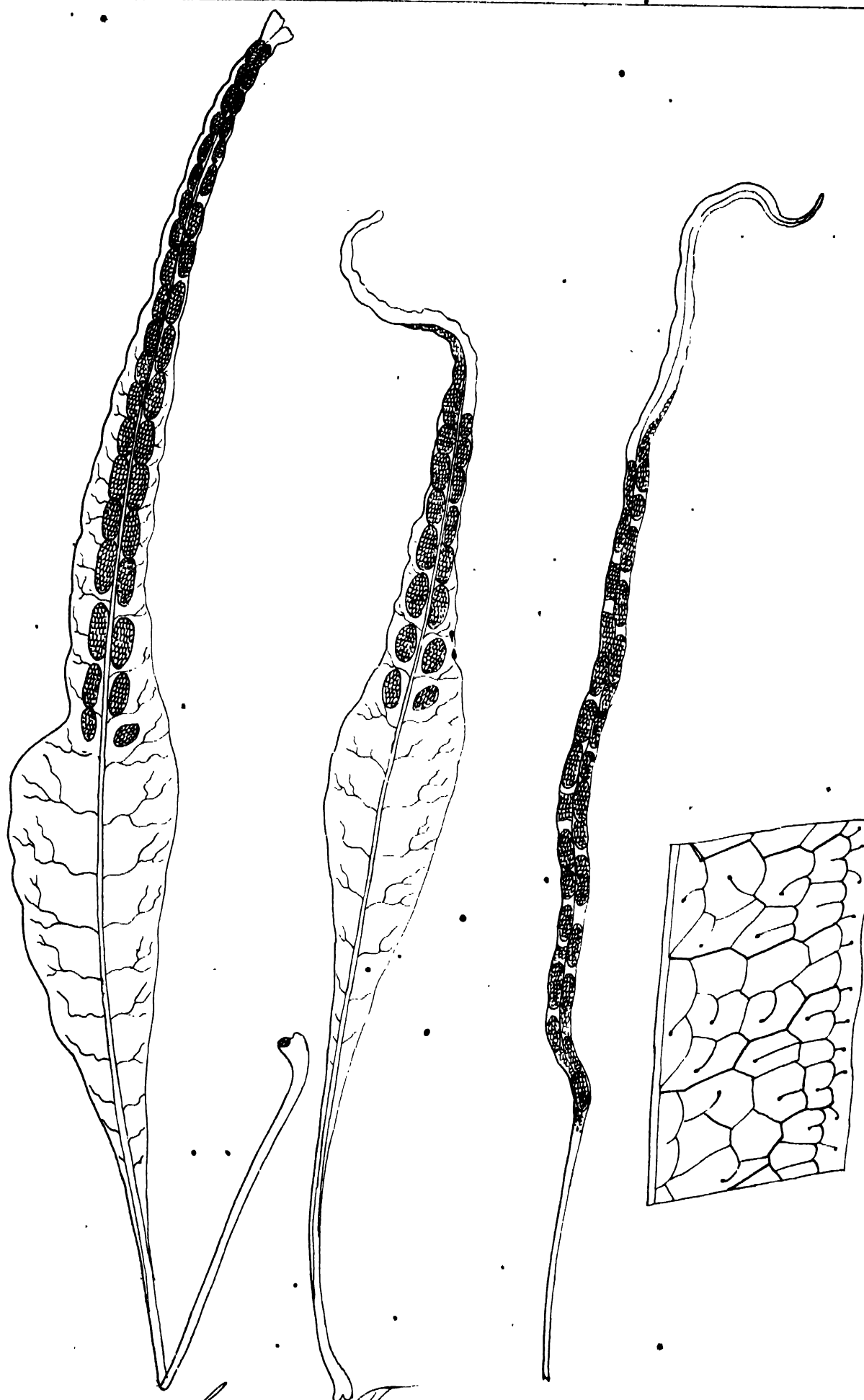
PLATE No. CCLXXIII.



GYMNOPTERIS.

GYMNOPTERIS FEEL. (Moore.) The plate represents some curious abnormal fertile fronds of *Gymnopteris Feei*, they are not uncommon in the large shola at Kodinkarnel on the Pulney mountains and are found growing from the same caudex with the usual sterile and fertile fronds. I have never met with any thing like them elsewhere, though I have searched very carefully in many localities. Mr. Fairbank of the American Mission first drew my attention to them, I have thought them well worth figuring in this work as they might be taken for some new species of *Loxogramma* if they got into Herbaria apart from the normal form.

PLATE No. CCLXXIV.



Gynophorus Feei.
abnormal forms (Moore.)

HYMENOPHYLLUM.

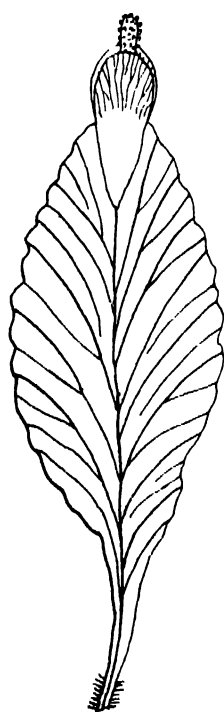
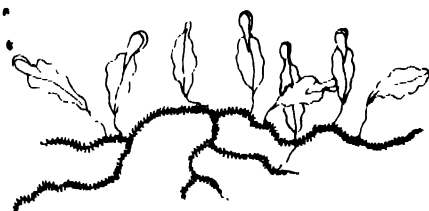
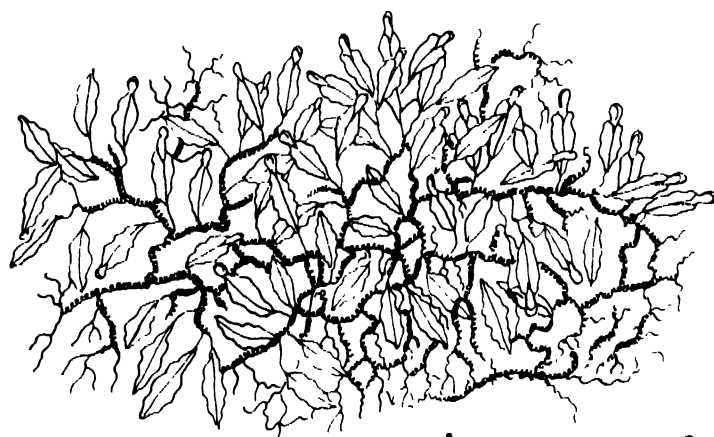
HYMENOPHYLLUM EXIGUUM. (Bodd.) Rhizome creeping pilose, stipes about 1-2 line long, pilose at the base, fronds $\frac{1}{4}$ to $\frac{1}{2}$ an inch long by 1-2 lines broad linear-oblong entire or slightly repand at the margin, veins pinnate from a central costa simple or forked, spurious venules few but nearly as prominent as the veins not reaching the costa and often not touching the margin, never anastomosing; involucre solitary terminal the base sunk in the frond, valves entire large and spreading receptacle exserted or included.

Hab. On trees in dense forests (3—4,000 feet elevation) Wynnaad and Coorg.

Some of the fronds are furnished round the margin with minute brown hair-like appendages, somewhat similar to those met with on *Trichomanes Neilgherrense* but much smaller, they are not found on all the fronds and are probably minute fungi, the spurious venules in this species are few in number and nearly as prominent as the real veins, in *Trichomanes Neilgherrense* they are many times thinner than the veins (so fine as only to be visible under a lens,) very numerous and often connected by a waved line near the margin, they are not represented in the figure of that species (Plate VI. Ferns of S. India).

The species here figured has quite as much right to be considered a *Trichomanes* as a *Hymenophyllum* as its involucre has a lengthened tube, but I have placed it in *Hymenophyllum* on account of its being distinctly 2 valved. Whilst this sheet was passing through the press I have received what appears to be the same species from Ceylon collected by Mr. Beckett in the Telganum quage in the Central Provinces, the involucre of the Ceylon specimen are quite exserted beyond the apex of the frond and not sunk in the margin, but *Trichomanes Henzeianum* differs in the same way the involucre being sometimes quite exserted and at other time quite sunk in the frond.

PLATE No. CCLXXV.



Hymenophyllum caucum
Bedd.

HYMENOPHYLLUM.

HYMENOPHYLLUM FLACCIDUM. (Van den Bosch.) Caudex creeping furnished with minute golden hair-like scales, stipes 1-2 inch long wiry naked or furnished with a few minute scales, frond oblongo-acuminate 3-8 inches long 1 to 2 inches broad, pinnate, rachis winged throughout and furnished beneath (as are the costa of the pinnæ and veins) with numerous hair-like scales, pinnæ more or less deeply pinnatifid, segments linear flaccid or often crispate, spinuloso-dentate, veins very thick and prominent touching the margin, spurious venules none, involucres terminal on the segments, oblongo-ovate divided to nearly the base, spinuloso-dentate towards the apex—nearly allied to *T. Smithii* Hook.

The specimen figured is from Birmah.

Hab. Birmah, Khasya Mountains.

PLATE No. CCLXXVI.



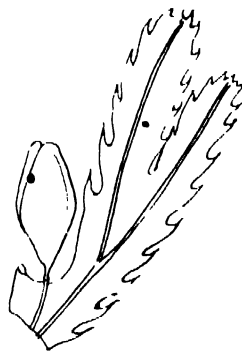
HYMENOPHYLLUM.

HYMENOPHYLLUM SMITHII. (Hook.) Stipes 1-2 inch long wiry naked or slightly tomentose, fronds oblong acuminate 3-8 inches long 2-3 inch broad bipinnatifid; rachis winged above ciliated below; pinnæ oblong-triangular, with a winged rachis, and simple or 1 to 4 times forked linear spinuloso-serrate segments; sori 1 to 4 terminal on the segments of the pinnæ on both sides; involucre oblong small divided about half way down, valves entire. *Hook. Sp. Fil.* 1. p. 97;--*Syn. Fil.* 69. *Leptocionium serrulatum*, Preslii, affine, and *holochilum*. *Van den Bosch*.

The figure is taken from Sir W. Hooker's "Species Filicum."

Hab. Malay Peninsula, Java, Philippine Islands.

PLATE No. CCLXXVII.



Hymenophyllum Smithii

Hook.

HYMENOPHYLLUM.

HYMENOPHYLLUM DENTICULATUM. (Sw.) Stipes 1-2 inch long erect naked, fronds ovato-triangular, tripinnatifid 2-3 inch long, 1 inch or more broad at the base, rachis margined throughout with a slightly undulated wing, pinnæ slightly crisped, the lower ones rhomboidal, twice as broad as long, deeply cleft with flabellate or pinnatifid linear segments, sori usually single, placed at the axils on the upper side of the pinnæ sometimes recurved, involucre ovate divided about 2-3rds of the way down, spinose on the back with serrulated valves. *Hook. Sp. Fil.* 101 ;—*Syn. Fil.* 71 ;—*Sw. Syn. Fil.* p. 148 and 375 ;—*Trich: denticulatum Blume En. Fil. Jav.* p. 226. *Hymenophyllum humile Nees et Bl. in nov. ct. Acad XI. t. 13. f. 3.* (Sterile).

The specimen figured is from Moulmein.

Hab. Moulmein 7,000 feet, Java.

PLATE No. CCLXXVIII.



Hymenophyllum denticulatum
Sw.

HYMENOPHYLLUM.

HYMENOPHYLLUM NEESII. (Hook.) Stipes 1-2 inches long, naked or slightly winged, with a crispate margin on both sides, fronds ovate about 2 inches long $\frac{3}{4}$ to 1 inch broad tripinnatifid; rachis winged throughout, the wing and pinnæ much crisp-
ed; pinnæ with distant narrow simple or 1-3 times deeply forked deeply toothed segments, sori small usually single, supra-axillary on the upper pinnæ; involucre subcylindrical below; divided more than $\frac{1}{2}$ way down, with 2 acute spinuloso-dentate valves. *Hook. Sp. Fil.* 1-99;—*Syn. Fil.* 71. *Hymen. dichotomum* Nees. in *Nov. act. acad.* 1823, p. 127 t. 13 f. 4 (*not Cav.*) *Trichomanes* Neesii. *Bl. En. Fil. Jav.* p. 226;—*T. aculeatum* J. Sm. in *En. Fil. Philipp.* *Leptocionium aculeatum.* *Van den Bosch.*

The specimen figured is from Penang.

Hab. Malay Peninsula, Java, Borneo, Fiji, Philippines.

PLATE No. CCLXXIX.

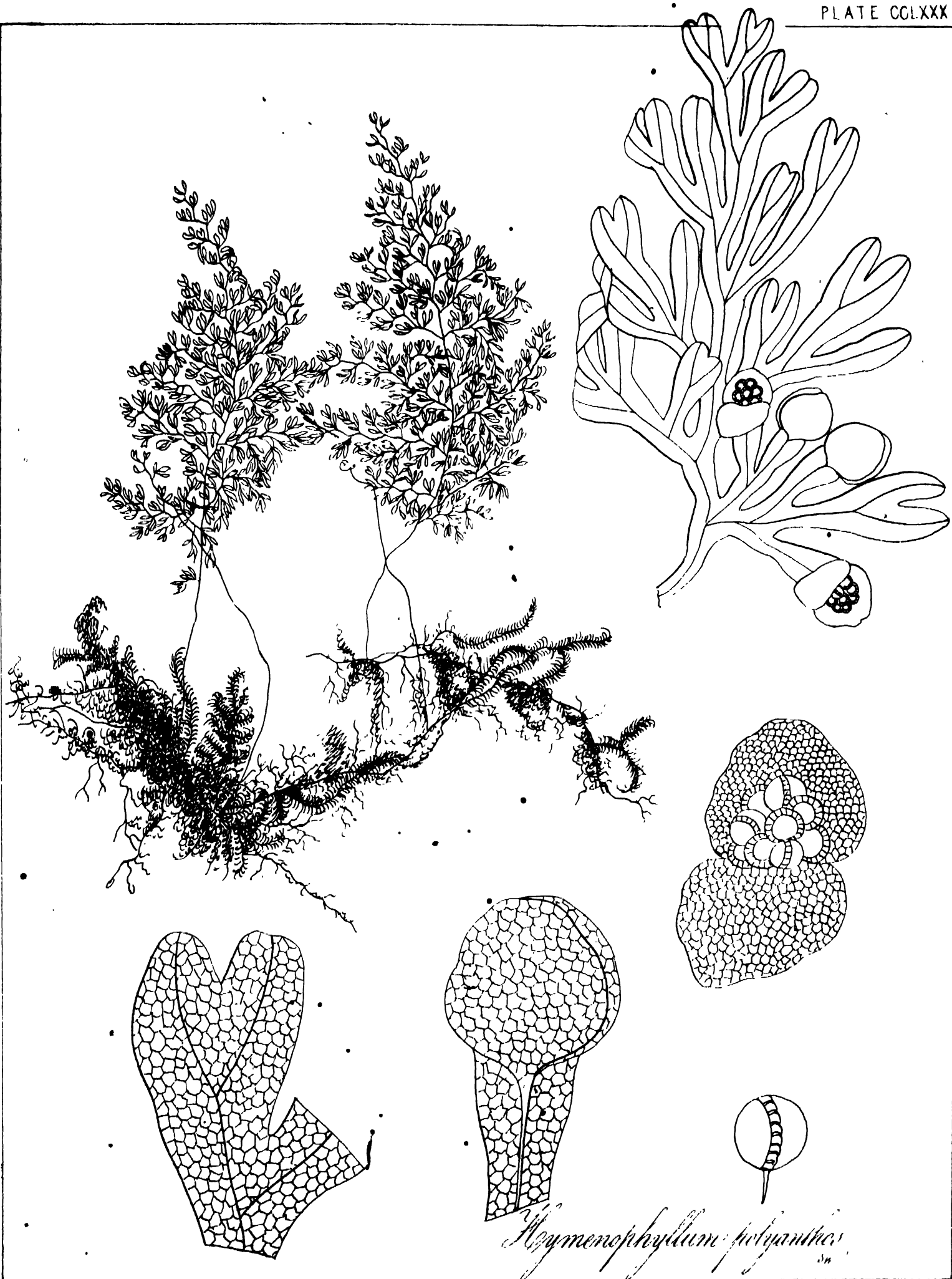


Hymenophyllum Nesselii (Hook.)

HYMENOPHYLLUM.

HYMENOPHYLLUM POLYANTHOS. (Sw.) At plate 267 of the Ferns of Southern India, I have figured under this name a fern from Ceylon which has been named by Van den Bosch, *Hymenophyllum macroglossum*, but which is considered by Sir W. Hooker to be only a small variety of the true *H. polyanthos*; as the Himalayan fern is so much longer and finer, I have given a figure of a specimen (from the Khasya hills), but will not offer any opinion as to whether the two are distinct species or only varieties—the Ceylon form I have lately found in the Anamallay and Tinnevely mountains and elsewhere on the western ghats of our presidency. Sir William Hooker in his Synopsis Filicum includes under his *H. polyanthos* about 30 species of Van den Bosch and amongst others the *H. Blumeianum* Spr. (Plate CCLXVI. Ferns of Southern India.), which I have lately discovered on the Tinnevely mountains (in the Ayen Coyl pass near Courtallum) and have no doubt about its being quite distinct from *polyanthos*.

PLATE No. CCLXXX.



Hymenophyllum polyanthum
S.M.

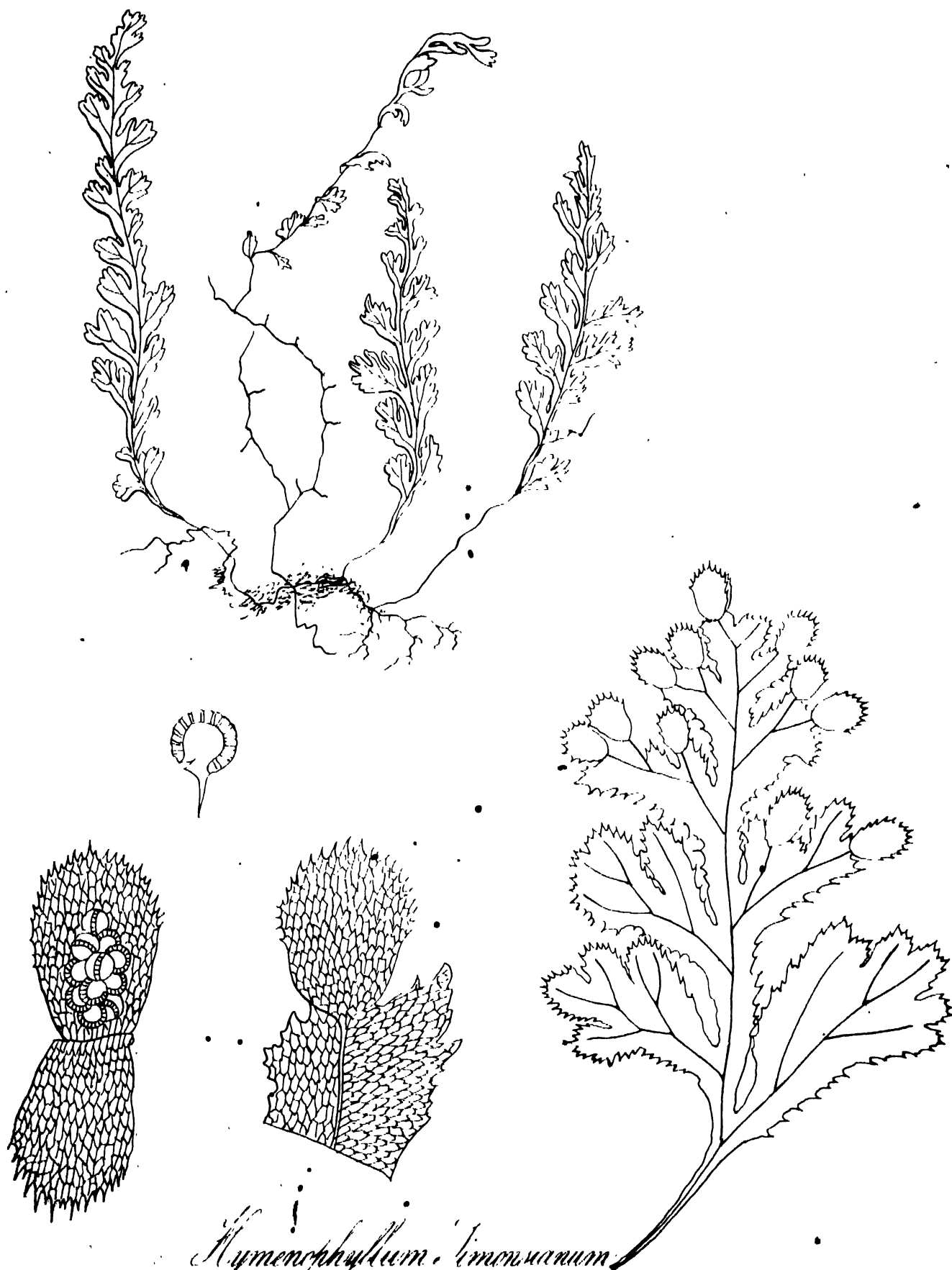
HYMENOPHYLLUM.

HYMENOPHYLLUM SIMONSIANUM (Hook) Stipe slender wiry naked 1 2 inches long, fronds linear oblong 2-3 inch long $\frac{7}{8}$ inch broad, once pinnatifid down to a broadly winged rachis, segments fan shaped with only shallow divisions directed from the apex towards the base, veins dichotomous, the margins spinuloso dentate, sori 1 to 4 terminal on the divisions of the upper pinnae, involucre broadly oblong, divided nearly to the base, valves spinuloso-dentate *Hook 2nd Cent. t 13, —Syn Fil 68,*

The specimen figured is from Sikkim.

Hab. Sikkim, Khasya Hills

PLATE No CCLXXXI



Hymenophyllum timoranicum
Hook.

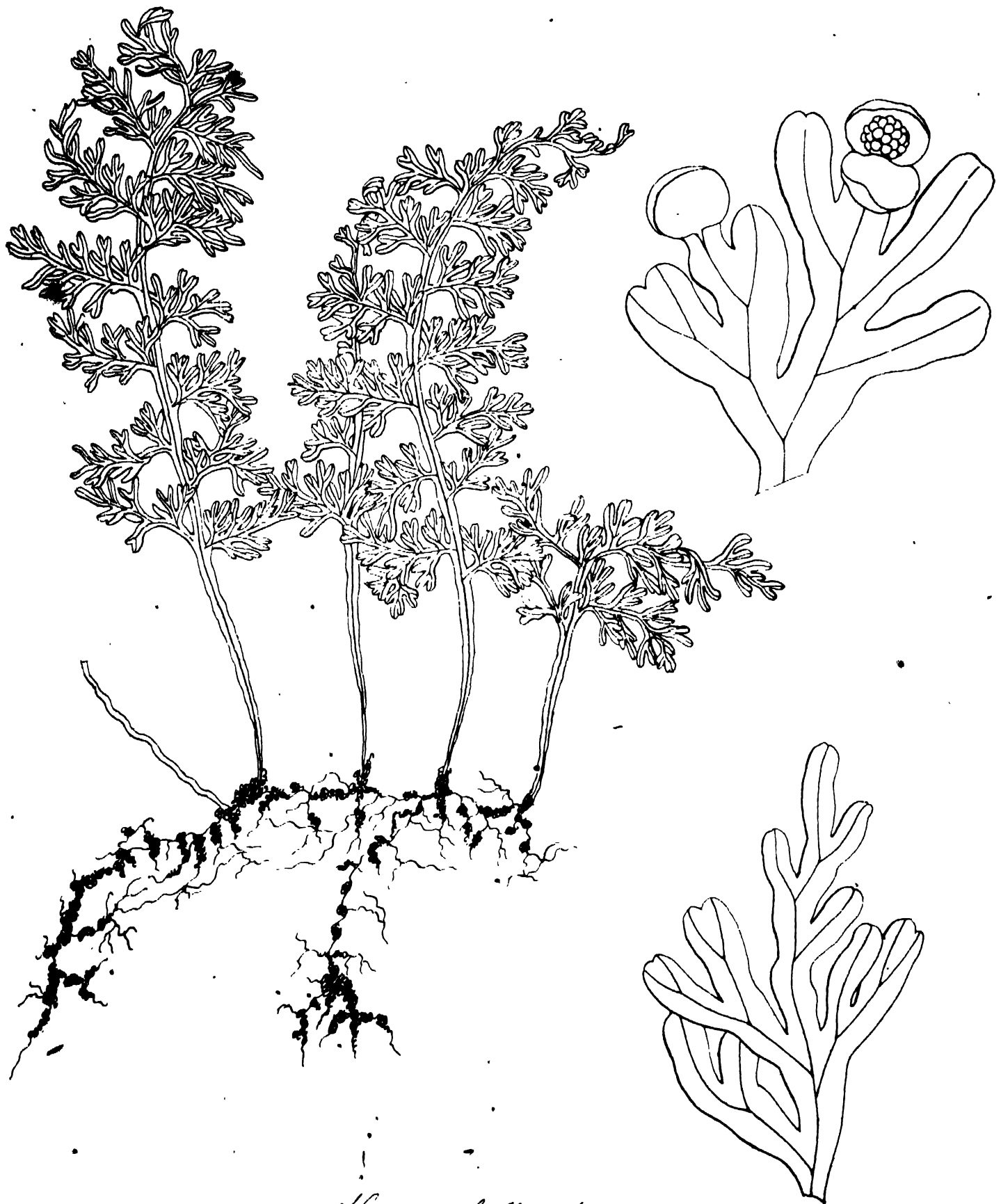
HYMENOPHYLLUM.

HYMENOPHYLLUM BADIUM. (Hook. et Grev.) Stipes 2-3 inches long slender winged above, fronds 4-12 inches long, oblong or ovato-lanceolate, acuminate tripinatifid; main rachis broadly winged throughout; lower pinnæ lanceolate-rhomboidal, divided down to a broadly winged rachis into several pinnules on each side, the lowest of which are a few times deeply incised, ultimate divisions broadly linear; sori 2-12 to a pinna, terminal and axillary on the segments on both sides; involucre nearly 1 line broad divided down nearly to the base; valves rounded nearly twice as broad as deep, the outer edge denticulate. *Hook. Sp. Fil.*, 1. 102. *Syn. Fil.* 60. *Hook. et. Grev. Ic. Fil.* t. 76.

The specimen figured is from Sikkim.

Hab. Sikkim, Nepal, Malay Peninsula.

PLATE No. CCLXXXII.



Hymenophyllum badium
(Hook & Grev.)

TRICHOMANES.

TRICHOMANES FILICULA. (Bory.) The fern here figured is the true *Filicula* of Bory,—Plate No. VII of the Ferns of Southern India is the *Schmidtianum* of Van den Bosch and is included by Sir W. Hooker under the *T. pyxidiferum* L. and the name on the plate should be altered from *Filicula* to *pyxidiferum* L. The true *Filicula* is distinguished by having a distinctly two-lipped involucre and belongs to the section or subgenus *Didymoglossum*, but is not otherwise distinguishable from *pyxidiferum*, and I have always looked upon them as the same species, they are both common on the Nilgiris and throughout India. I annex Sir W. Hooker's descriptions of both species with localities.

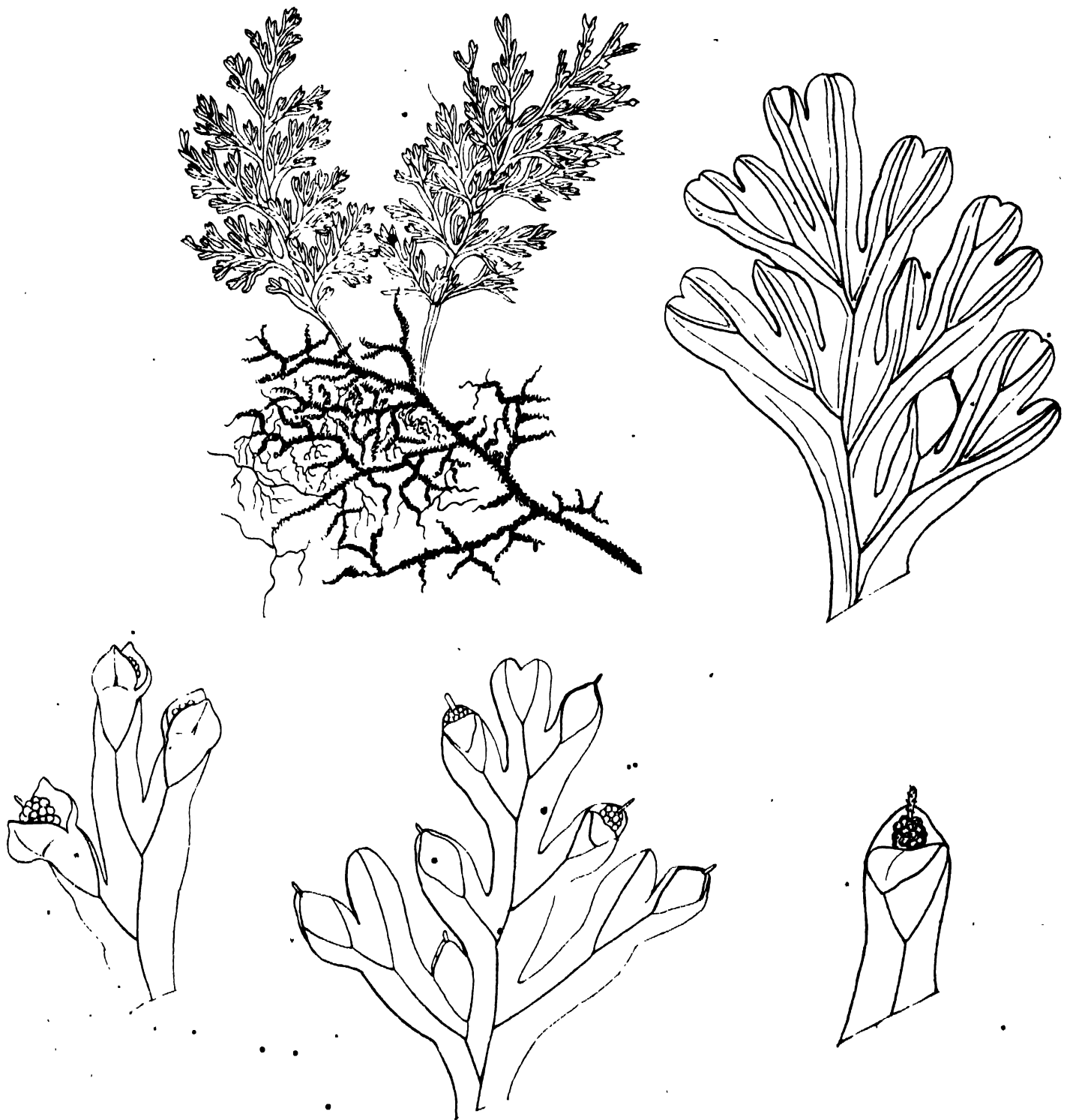
T. FILICULA. (Bory.); rhizome wide-creeping, tomentose, rather slender, stipes 1-2 inch long, naked, slightly winged above; frond 1-4 inch long, $1\frac{1}{2}$ -2 inch broad, ovate, tripinnatifid, main rachis with a very narrow wing or free below; pinnae ovate-rhomboidal, pinnatifid down to a narrowly-winged rachis; the lower pinnule again deeply pinnatifid; ultimate segment linear; texture firm, membranaceous; a central costa in each segment, spurious venules none or indistinct, sori 1 to 4 to a pinna, axillary or terminal on the segments; tube sunk or somewhat exserted, the mouth very distinctly two-lipped, the lips subtriangular with a rounded apex,—Hk. Sp. 1. p. 124. *Didymoglossum*, Desv.

Hab. Mauritius, Bourbon, Madagascar, Natal, Cape Colony and Fernando Po; Nepaul, Assam, Japan, India, Ceylon, Java, Borneo and Polynesian Islands.

PLATE No. CCLXXXIII.

T. PYXIDIFERUM. L.; rhizome wide-creeping, tomentose, rather slender; stipes 1-2 inch long, naked, winged above; frond 1-6 inch long, $1-1\frac{1}{2}$ inch broad, ovate-oblong, tripinnatifid, main rachis with a very narrow wing; pinnae ovate-rhomboidal, pinnatifid down to a narrowly-winged rachis, with the lower pinnule again deeply pinnatifid; ultimate segment linear, often emarginate at the apex; texture membranaceous; a central costa in each segments; spurious venules none or indistinct; sori 1 to 4 to a pinna, axillary, tube more or less winged, mouth broadly dilated but scarcely two-lipped; receptacle filiform, exserted. Hk. Sp. 1. p. 124. Hk. and Grev. Ic. Fil. t. 206.—Ferns of Southern India t. vii.

Hab. Tropical America, from Mexico and the West Indies southward to Brazil and Peru; Bourbon, Cape of Good Hope, Angola, Fernando Po, Hindustan as far north as Khasia, Moulmein, Borneo and New Caledonia.



Tichomanes Filicula

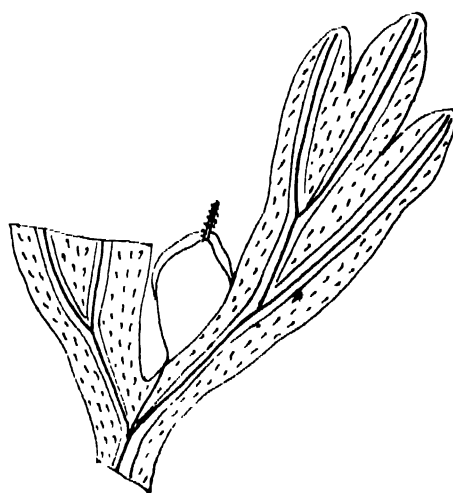
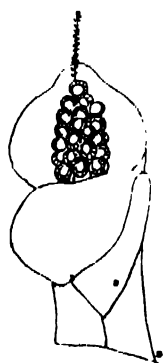
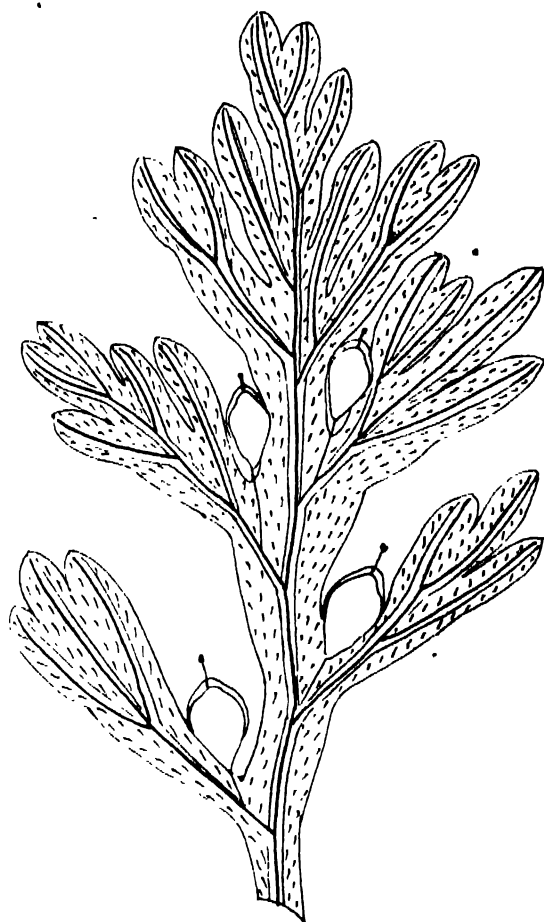
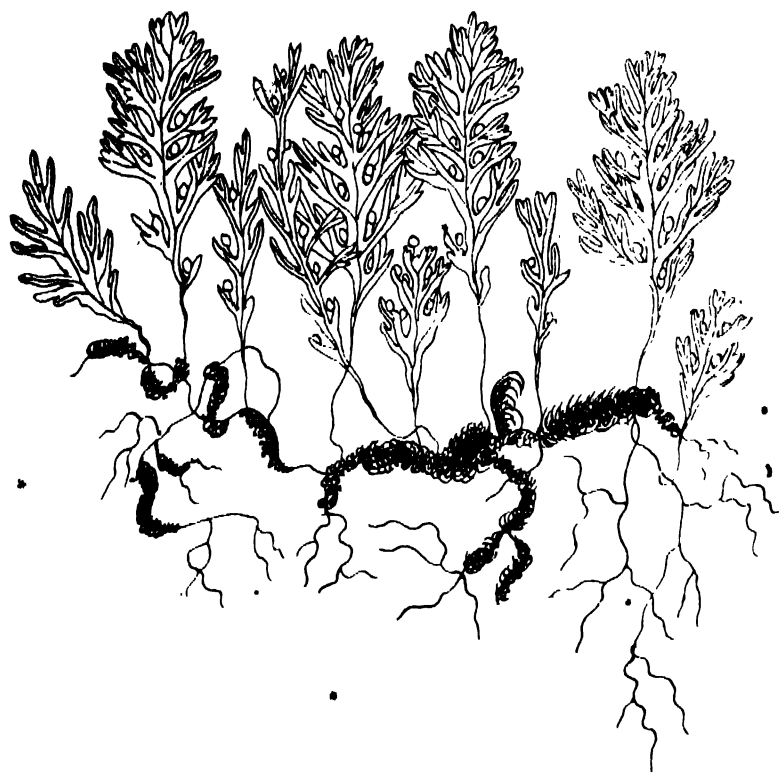
(Bory)

TRICHOMANES.

TRICHOMANES INSIGNE. (Van den Bosch.) This fern is included by Sir William Hooker in his Synopsis under *Trichomanes Filicula*, if a variety of that species it has a distinct habit, so I have figured it.

Hab. N. W. Himalaya (Falconer).

PLATE No. CCLXXXIV.



Tichomanes insignis

(Vanden Bosch)

TRICHOMANES

TRICHOMANES PLICATUM. (Van den Bosch) This is the *Trichomanes Filicula* var. *β -late-alatum* of the *Synopsis Filicum* (Hooker), it differs from *Filicula* in the ultimate segments of the pinnules being very narrow and acute and the wing of the rachis being somewhat crispid, I find the spurious venules the same in both species or varieties, but Hooker states that they are distinct in this and wanting or indistinct in *Filicula*.

The specimen figured is from Birmah.

PLATE No CCLXXXV.



Tichomanes plicatum

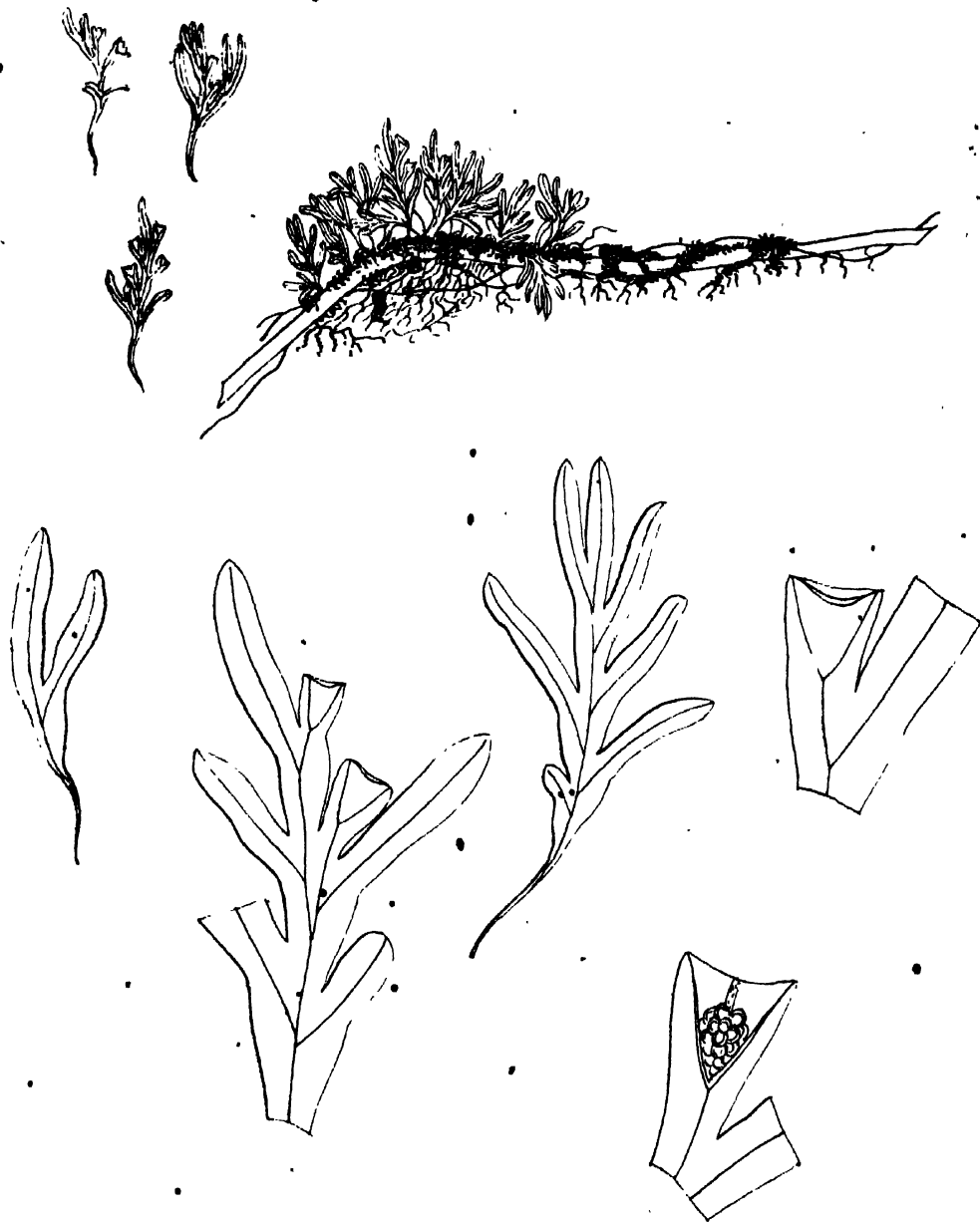
(Vander Bosch)

TRICHOMANES.

TRICHOMANES KURZII. (Bedd.) Rhizome stout creeping, stipe 2-4 lines long, fronds $\frac{1}{2}$ to $\frac{3}{4}$ inch long, 2-3 lines broad, very irregularly pinnatifid with the linear segments of different lengths, sori solitary terminal on several of the segments; base of the involucre sunk in the frond, no lips, veins a single central costa to each segment.

Hab. Phoenix Bay, S. Andaman (Kurz.)

PLATE No. CCLXXXVI.



Trichomanes Kurzii (Bedd.)

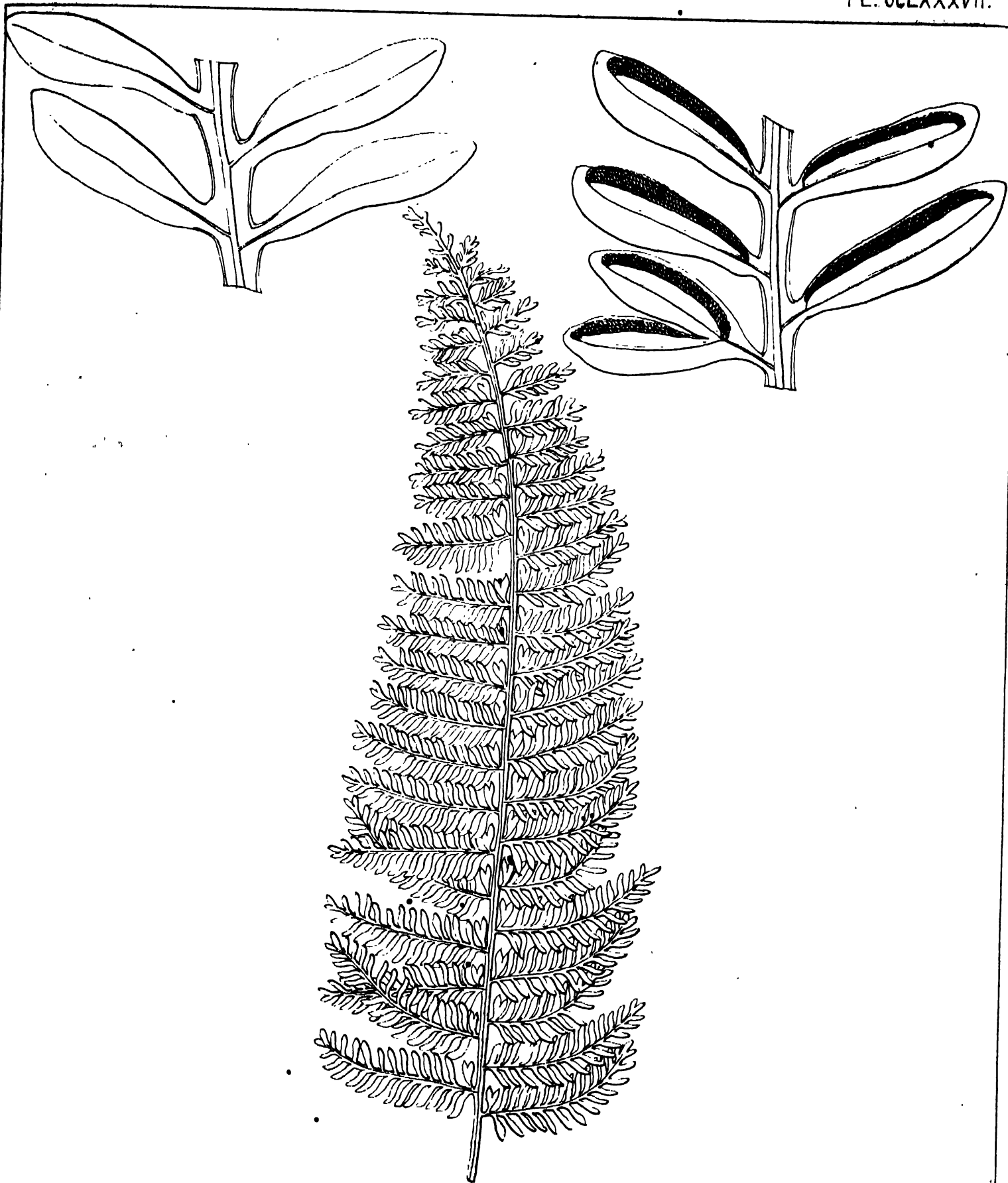
ASPLENIUM.

ASPLENIUM BELANGERI. (Kze.) Caudex short, stout erect, apparently formed of the united stipes and roots, stipites densely tufted, 4 inches to a span long, compressed upwards greenish, fronds 1-1½ foot long (the blades almost forming a parallelogram) acuminate only at the apex, sparingly stellato-squamulose beneath, here and there proiferous, subchartaceous, pale-green, bipinnate, primary pinnae from 1-2 inches long, horizontally patent, singularly uniform in the whole length, linear obtuse, nearly sessile again pinnated (or they may be said to be deeply pinnatifid,) pinnules or segments 2-3 lines long linear-clavate or subspatulate obtuse straight or a little curved decurrent with the rachis simple monosorous or the lowest superior one is bifid or subpinnatifid, veins solitary central, sori large conspicuous, occupying nearly the length of the pinnule, marginal, involucre, color and texture almost of the frond, main rachis compressed, partial ones distinctly winged. *Hook. Sp. Fil.* iii. 209 ;—*Kze. Bot. Zeit.* vi. p. 176 ;—*Darea furcata*, *Bl.* p. 207 ;—*Aspl. Veitchianum*, *Moore* ;—*Aspl. decorum*, *Kze. Bot. Zeit.* vi. 176.

The specimen figured is from the Malay Peninsula.

Hab. Malay Peninsula, Java, Borneo, Sumatra.

PLATE No. CCLXXXVII.



Asplenium Belangeri (Kun.)

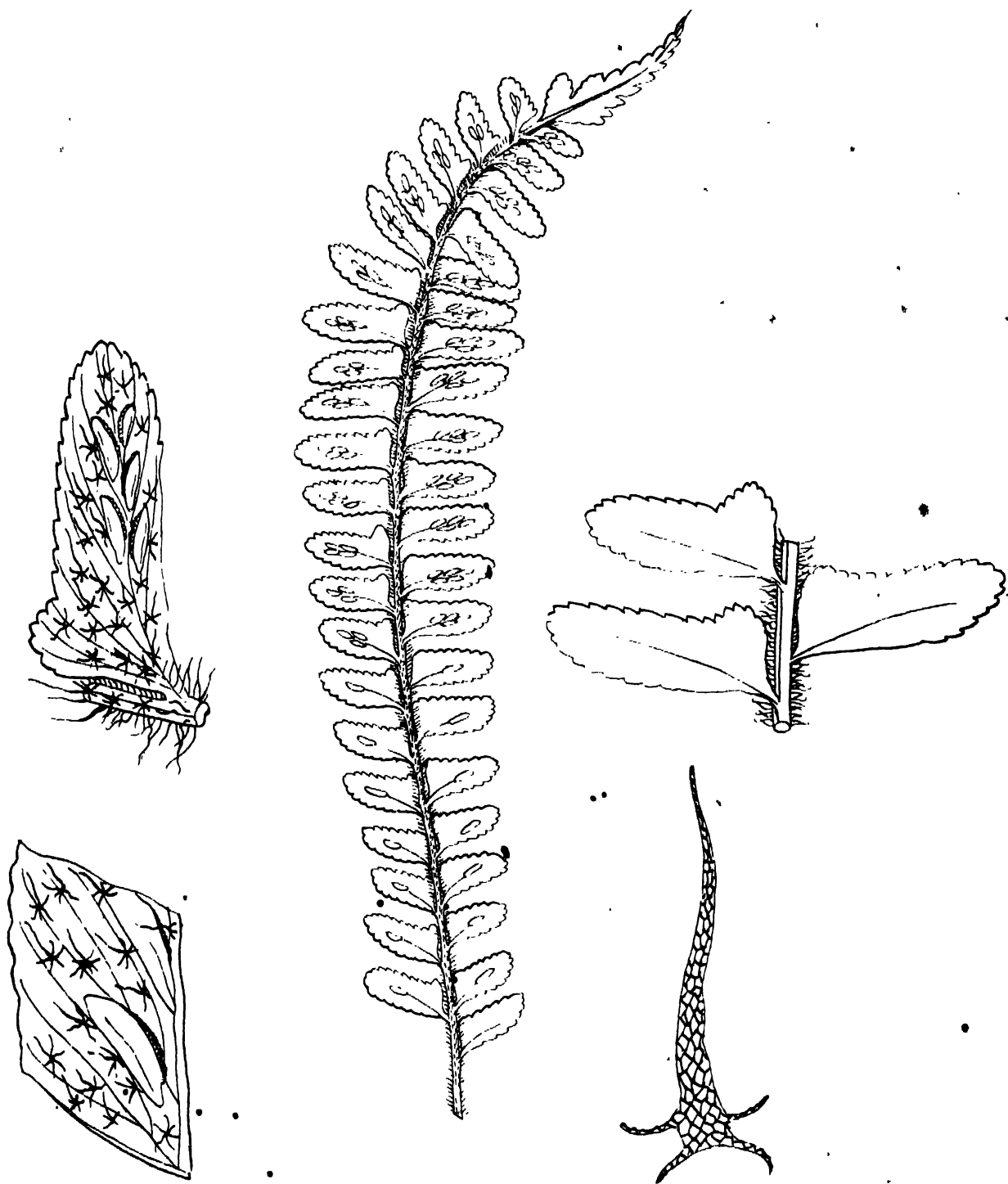
ASPLENIUM.

ASPLENIUM SUBAVENIUM. (Hook.) ; frond (a portion only) a span long lanceolate coriaceous-chartaceous, very opaque; pinnated, pinnae $\frac{1}{2}$ of an inch long, numerous approximate horizontal sessile oblong obtuse, upper half obscurely serrated, cuneate at the base, superior base truncated subauriculate, inferior margin cut off as it were by a straight line, terminal pinna elongated pinnatifid below, costa and veins sunk obsolete, sori 2-6 oblong oblique, occupying the disc of the frond between the middle and the apex, involucre firm-membranaceous, rachis ebony-black terete rigid sparsely setose. *Hook. Sp. Fil.* iii. 143.

The figure is taken from Hooker's "*Species Filicum*."

Hab. Penang, Madagascar

PLATE No. CCLXXXVIII.



Asplenium subavenium (Hook.)

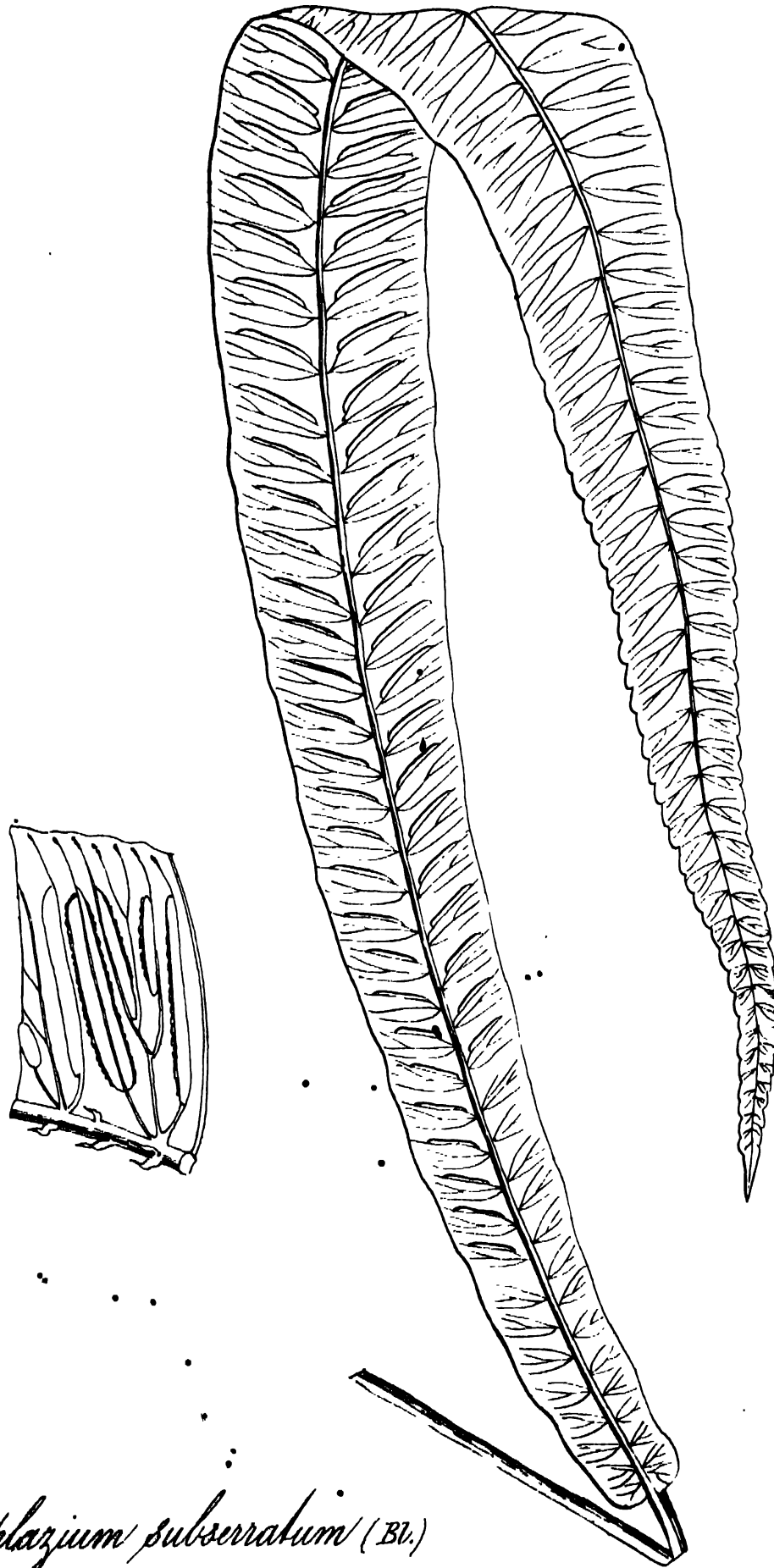
DIPLAZIUM.

DIPLAZIUM SUBSERRATUM. (Bl.); caudex "creeping elongated," fronds membranaceous $1\frac{1}{2}$ foot long an inch to an inch and a half wide, glabrous and satiny, elongato-oblong lanceolate sharply acuminate moderately attenuated below, obtuse or acute at the base, towards the middle sinuato-crenate coarsely dentato-serrated nearer the apex, costa slender firm prominent beneath, veins fascicled horizontal or nearly so, one to three of the exterior branches soriferous, sori distant often curved, involucre frequently diplazoid, narrow-linear, occupying about two-thirds of the space between the costa and margin, stipes 1-2 inches long slender terete. *Hook. Sp. Fil.* iii. 236;—*Bl. En.* p. 174—*Mett. Aspl.* p. 90.

The figure is taken from Hooker's "Species Filicula."

Hab. Penang, Java.

PLATE No. CCLXXXIX.



Diplazium subserratum (Bl.)

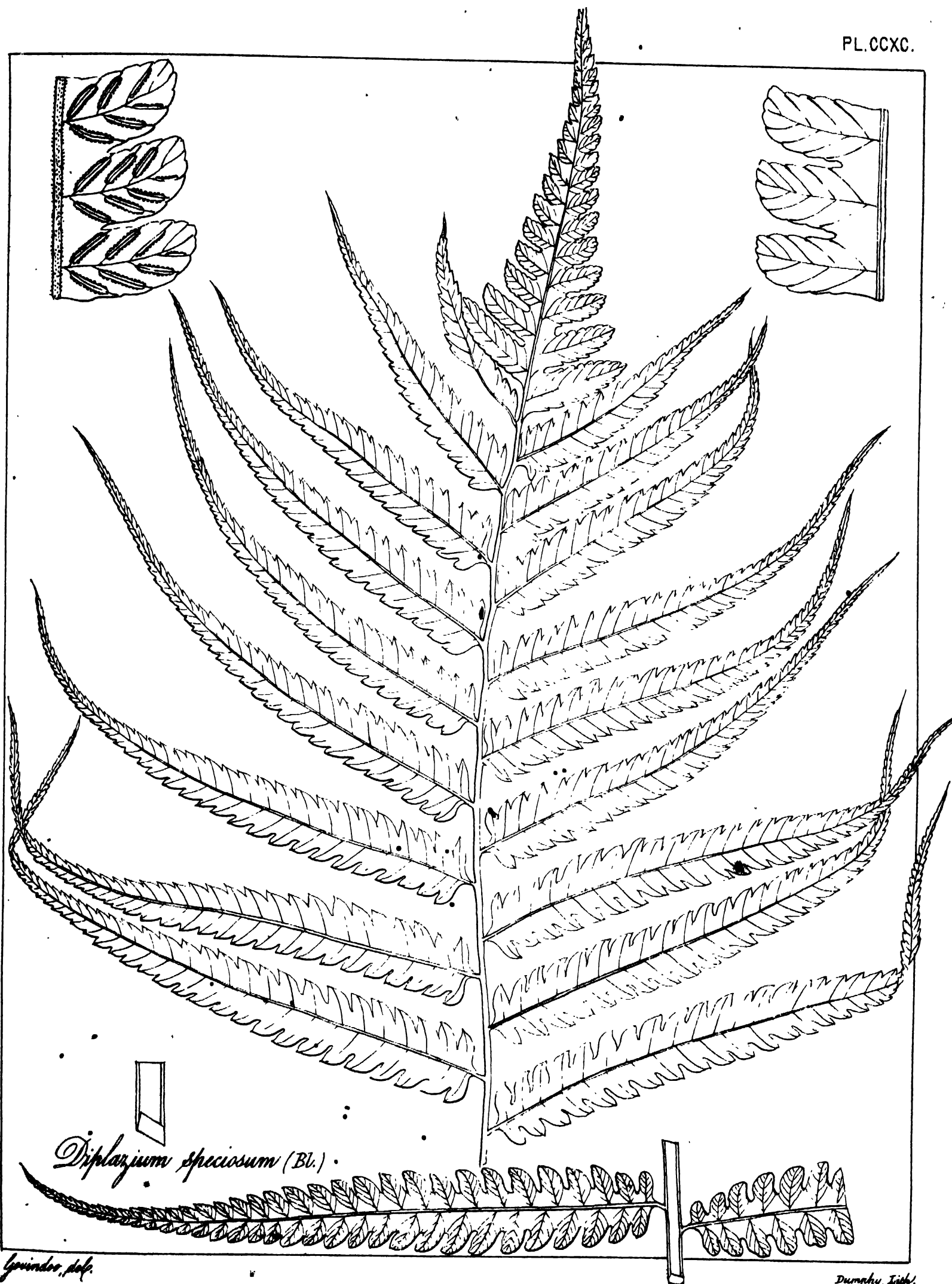
DIPLAZIUM.

DIPLAZIUM SPECIOSUM. (Mett.); stipes tufted, 1 foot or more long, firm, erect, straw-colored or brownish, nearly naked; frond 1-2 feet long, 8-12 inch broad, with 10-20 pairs of pinnæ below the pinnatifid apex, the lower ones often stalked, 4-6 inch long, 1-1½ inch broad, the apex much acuminate, the edge lobed, the lobes reaching down two-thirds of the way to the rachis or more, close, ¼ inch broad, slightly toothed, the base truncate or slightly cuneate; texture herbaceous, but firm; rachis erect, naked; veins pinnate in the lobes; sori slender, reaching nearly to the edge. *Diplazium*, *Blume*; — *A. acuminatum*, *Wall. Mett.* (non *H.* and *A.* *Hook. Syn. Fil.* p. 235. ●

The specimen figured is from the Malay Peninsula.

Hab. Malayan Peninsula, Java, Hong-Kong, Philippines.

PLATE No. CCXC.



Diplazium speciosum (Bl.)

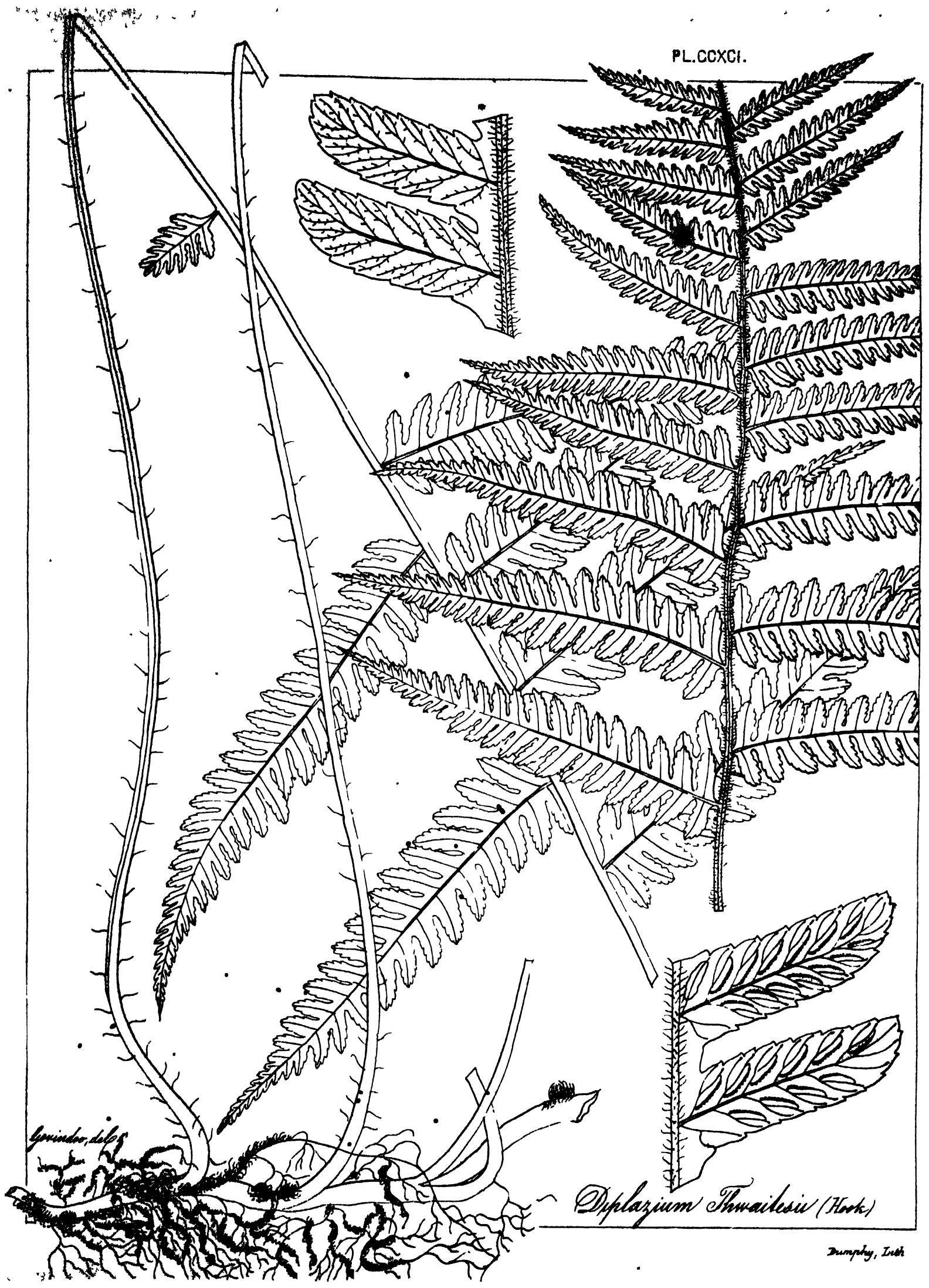
DIPLAZIUM.

DIPLAZIUM THWAITESII. (A. Br.) Caudex long, creeping, black rooting, stipites scattered 4 inches to a span long, and as well as the main rachis woolly with crisped hairs mixed with lanceolate membranaceous scales, fronds a span to a foot long, ovato-lanceolate acuminate, membranaceous, pinnate, pinnatifid at the apex, pinnæ $1\frac{1}{2}$ -3 inches long, approximate, sessile, horizontal, lanceolate, obtuse, straight, deeply almost to the rachis pinnatifid with short-oblong obtuse lobes, toothed at the apex, veins pinnated simple or forked, sori in two oblique rows in each lobe, rather small linear-oblong, involucre pale-brown, membranaceous, convex, eroso-ciliate, and diplazioid, but far more generally asplenioid, costæ and veins above subglandularly and very sparsely hirsute. *Hook. Sp. Fil.* iii. 250 ;—*A. Bravn. Ind. Hort. Berol.* 1857.

The specimen figured is from Ceylon. It is nearly allied to *D. lasiopteris*, and until I lately received copious specimens from Mr. Thwaites, I had referred it to that species.

Hab. Ceylon.

PLATE No. CCXCI.



Diplazium Thwaitesii (Hook.)

Dumphy, Lith

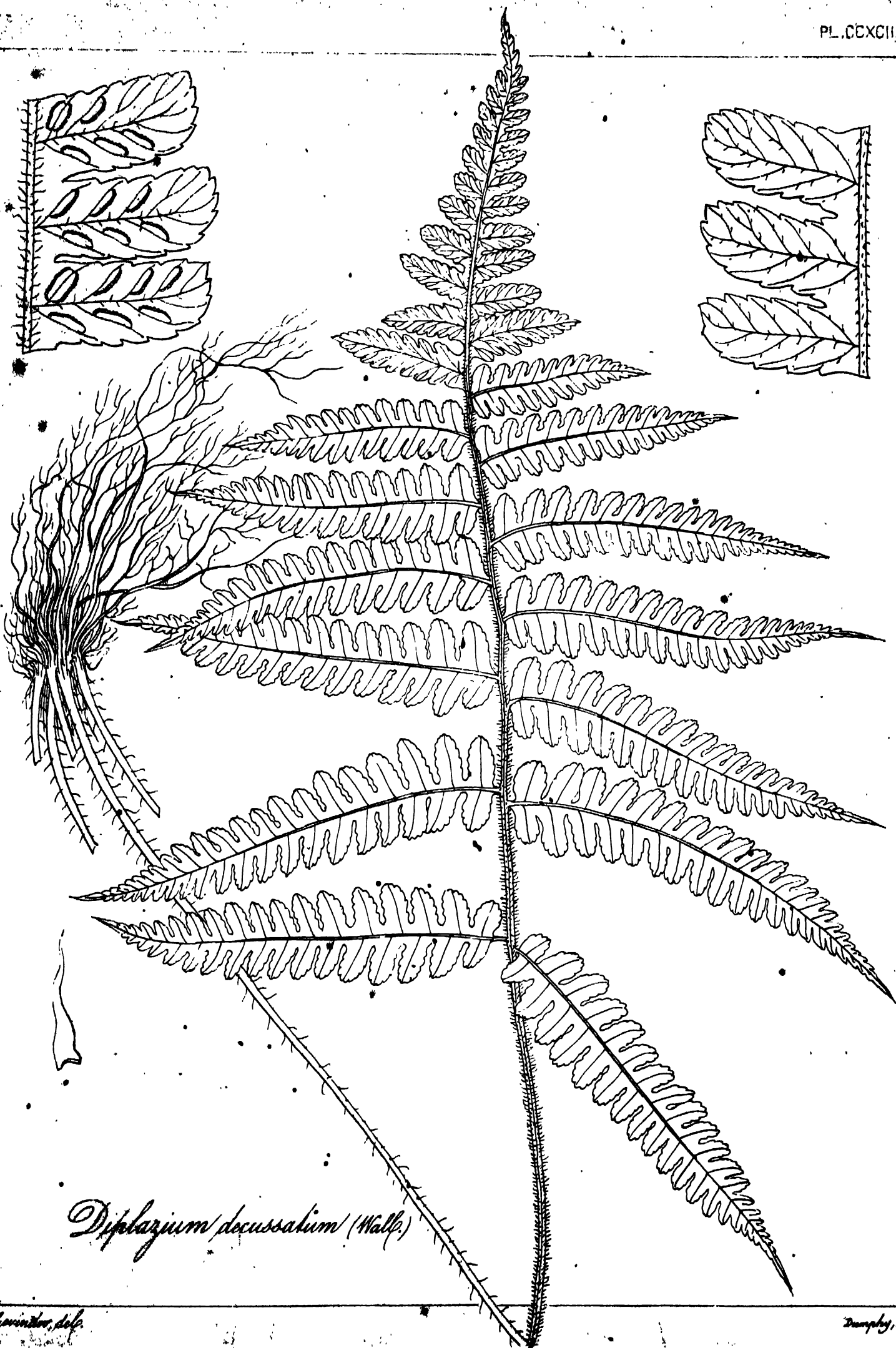
DIPLAZIUM.

DIPLAZIUM DECUSSATUM. (Wall.) Caudex erect, stipes 12-16 inches long scaly towards the base, fronds 8-10 inches long, 6-8 inches broad at the base, deltoid ovate, pinnate; pinnæ about 8 on each side alternate (below the pinnatifid apex) lower ones petiolate, middle ones sessile, upper decurrent, 3-4 inches long $\frac{1}{2}$ to nearly 1 inch broad, pinnatifid 2-3rds down to the costa, segments with a very rounded apex toothed at the margin, veins straight or more or less flexuose, veinlets 5-6 on each side of the segment, alternate or opposite, generally simple, sometimes forked, reaching the margin or terminating just within it; rachis costa and veins sparingly furnished with setaceous hairs, sori lower ones double, upper single. Wall, Cat. No. 2208.

The specimen figured is from Ceylon (C. P. 3951) and I have lately found it on the Tinnevely hills; it is nearly allied to *D. lasiopteris* but has a different caudex. Mr. Baker refers it to *Diplaz. Schkuhrii*, Hook. Pl. 230 of this work, and places both under *D. Japonicum Thunb.* which has a creeping caudex. The species that I have figured as *D. Schkuhrii* has an erect caudex but is bipinnate in its larger fronds which this species appears never to be.

Hab. Ceylon, Tinnevely Hills, Himalayas.

PLATE No. CCXCII.



Diplazium decussatum (Wall.)

DIPLAZIUM.

DIPLAZIUM POLYPODIOIDES. (Mett.) This species differs from the plant figured at Plate CLXIII of the *Ferns of Southern India* in the midrib of the segments, being given off at an acute angle instead of at nearly a right angle, and the segments of the pinnules being wider, it is named by Mr. Moore at p 335 of his "*Index Filicum*" *Diplazium polypodioides* var. β . major, but there is evidently some confusion in the species or varieties of this group as Mr. Moore gives *D. asperum* and *arborescens* and two varieties of *polydioides* as from Ceylon or Southern India. Plate No. CLXIII. above alluded to is I believe the *D. asperum* of Blume (and the name on the plate should be altered); it is however included by Sir W. Hooker under "*polypodioides*," it has numerous asperities on the main and secondary rachis, which are wanting in this species, and has more veinlets in each segment. Authentic specimens of *D. arborescens*, which I have received from the Mauritius do not differ from some Indian forms of the plant here figured, and I have certainly only two varieties or species (if they are distinct) from Southern India.

The specimen figured is from the Himalayas (Col. Dyas)

Hab. Himalayas, Ceylon (C. P. 1852), Southern India.

PLATE No. CCXCIII.



Diplazium polypodioides (Met.)

Gouindoo, del.

Dumort., Lith.

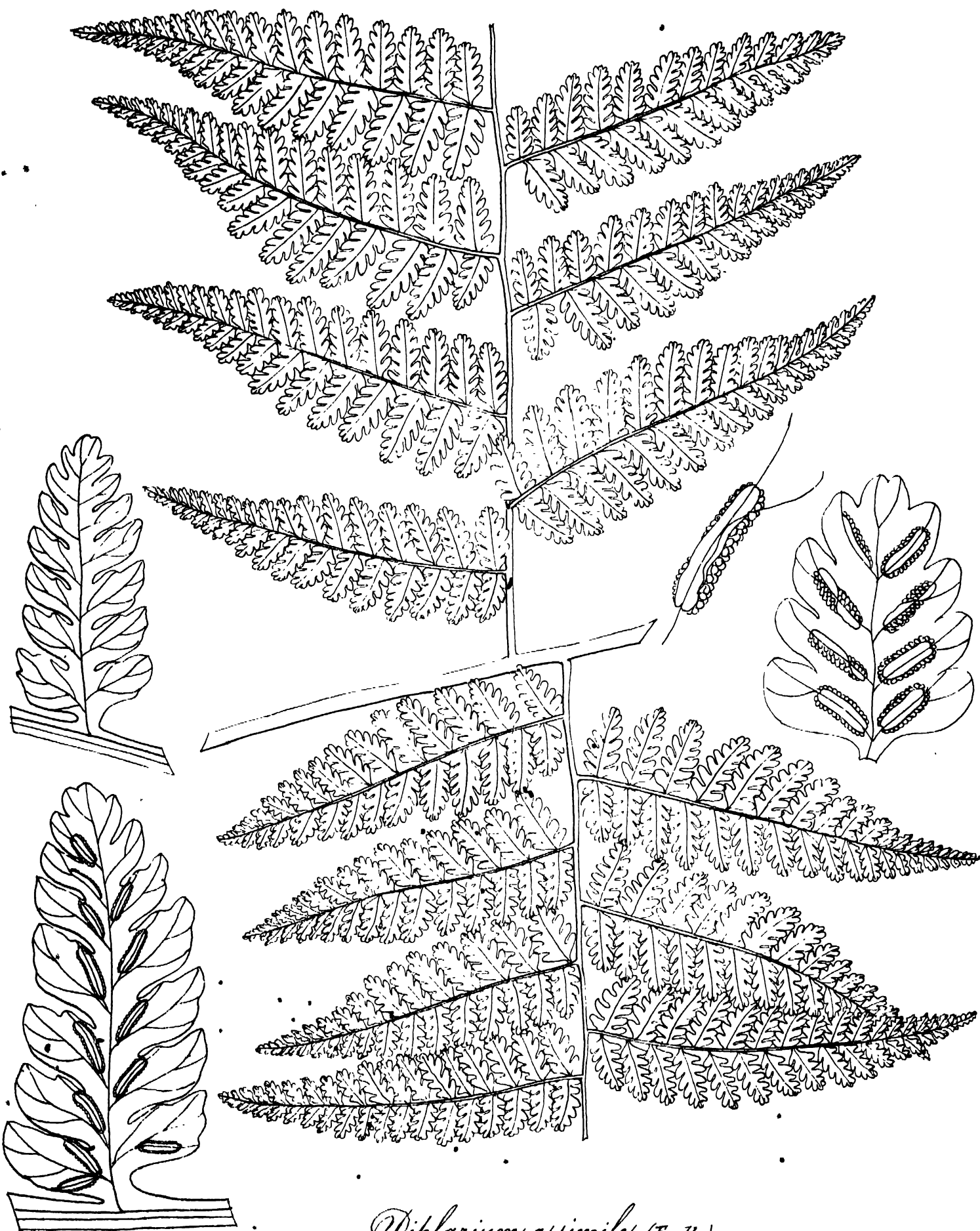
DIPLAZIUM.

DIPLAZIUM ASSIMILE (Endl.) ; stipes $1\frac{1}{2}$ to 2 feet long, fronds glabrous, deltoid, membranaceous flaccid, tripinnate, primary pinnæ nearly opposite towards the base of the frond, alternate nearer the apex, lower ones up to 12-15 inches long by 6 inches broad, secondary pinnæ 2 to $3\frac{1}{2}$ inches long by $\frac{1}{2}$ to $1\frac{1}{2}$ inch broad, gradually acuminate, tertiary pinnæ a little more than $\frac{1}{2}$ an inch long by $\frac{1}{4}$ inch broad, lower one sessile upper decurrent, almost a parallelogram in shape with a broad rounded apex, divided $\frac{1}{2}$ or 2-3rds of the way to the costa into about 5 segments on each side, segments slightly falcate entire or generally with one toothlet on the upper margin and rarely one on the lower, veins forked or pinnate, double sori numerous, involucre elongated membranaceous not breaking but quite that of *Asplenium* and *Diplazium*,—*Asplenium* assimile;—*End. Fl. Norf.* 10—*Moore Ind. Fil.* p. 114;—*Athyrium* assimile, *Presl.*

This species has been included by Sir W. Hooker in his *Species Filicum* under *Athyrium Australe* Brack (which is united with *umbrosum* J. Sm. by Mr. Baker) it however has a quite different involucre to the South Indian species figured under that name at Pl. CLVIII. Ferns of S. India, and it is more flaccid and delicate and is tripinnate (subquadripinnate) with the ultimate segments subentire, whereas *A. Australe* is bipinnate (subtripinnate) with ultimate pinnules much toothed, these latter differences however are not always constant, or much to be depended upon as a specific difference in large compound ferns of this sort, as young or even small grown specimens may be bipinnate when larger specimens of the same species are tripinnate.

The specimen figured is from Ceylon (Central Provinces.) (Col. Perad 1,347.)

PLATE No. CCXCIV.



Diplazium assimile (Endl.)

ATHYRIUM.

ATHYRIUM FIMBRIATUM. (Wall) Caudex? stipes stout darkish-brown glossy, 1 foot and more long, copiously paleaceous, most sq towards the base with large glossy tawny lanceolato-subulate scales, frond ample 2-3 feet long ovate or subdeltoid, acuminate firm-coriaceous, subpolystichoid, 4 pinnate, primary pinnae petiolate (as are the secondary and tertiary ones) 6-12 inches long distant from a broad base lanceolate much acuminate, secondary ones also distant of the same shape but not acuminate, 1-1½ inch long numerous, ultimate pinnules ovato-lanceolate, ¼ of an inch long. superior basal one the largest acute, all pinnatifid with acute lobes, auricled at the superior base, terminal ones subconfluent, sori 2-5 on each pinnule broad-oblong or in age almost globose, very prominent and copious, involucre brown membranaceous, broad, generally crescent-shaped or subhippocrepiform fimbriated extremely convex, soon forced back by sori, rachises all pale-brown, glossy more or less flexuose. *Aspidium fimbriatum*, Wall. Cat. n. 339; not *Athyrium foliosum*, Moore Ind. Fil. p. 92;—An *Aspl. decipiens*, Metten. Asplen. p. 195, t. 6. f. 9, 10;—Hook. Sp. Fil. iii. 284.

The specimen figured is from Kumaon.

It is scarcely distinct from some forms of the common Nilgiri fern which I have figured at Plate CLV. of the Ferns of Southern India as *A. pectinatum* (Wall.), but which is *A. aspidioides* (Schlecht). Sir W. Hooker refers the *pectinatum* of Wall. to *Filix-femina*, but some authentic specimens that I have seen of *pectinatum* are not to be distinguished from our Nilgiri fern; there are several forms of it on the Nilgiris, and the more I study this group I am inclined to think that the different forms of *Filix-femina-pectinatum* or *aspidioides* and *fimbriatum* (and perhaps some other species) run so one into the other that it is almost impossible to distinguish them satisfactorily and that the only chance of doing it would be by a careful examination of numerous plants growing in their natural habitats.

PLATE.No. CCXCV.



Athyrium fimbriatum (Wall.)

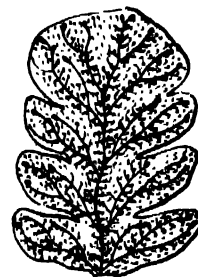
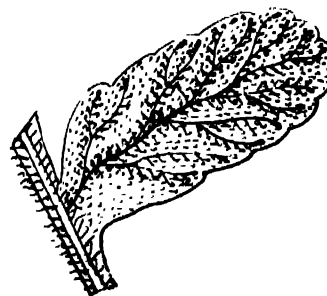
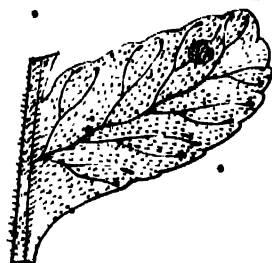
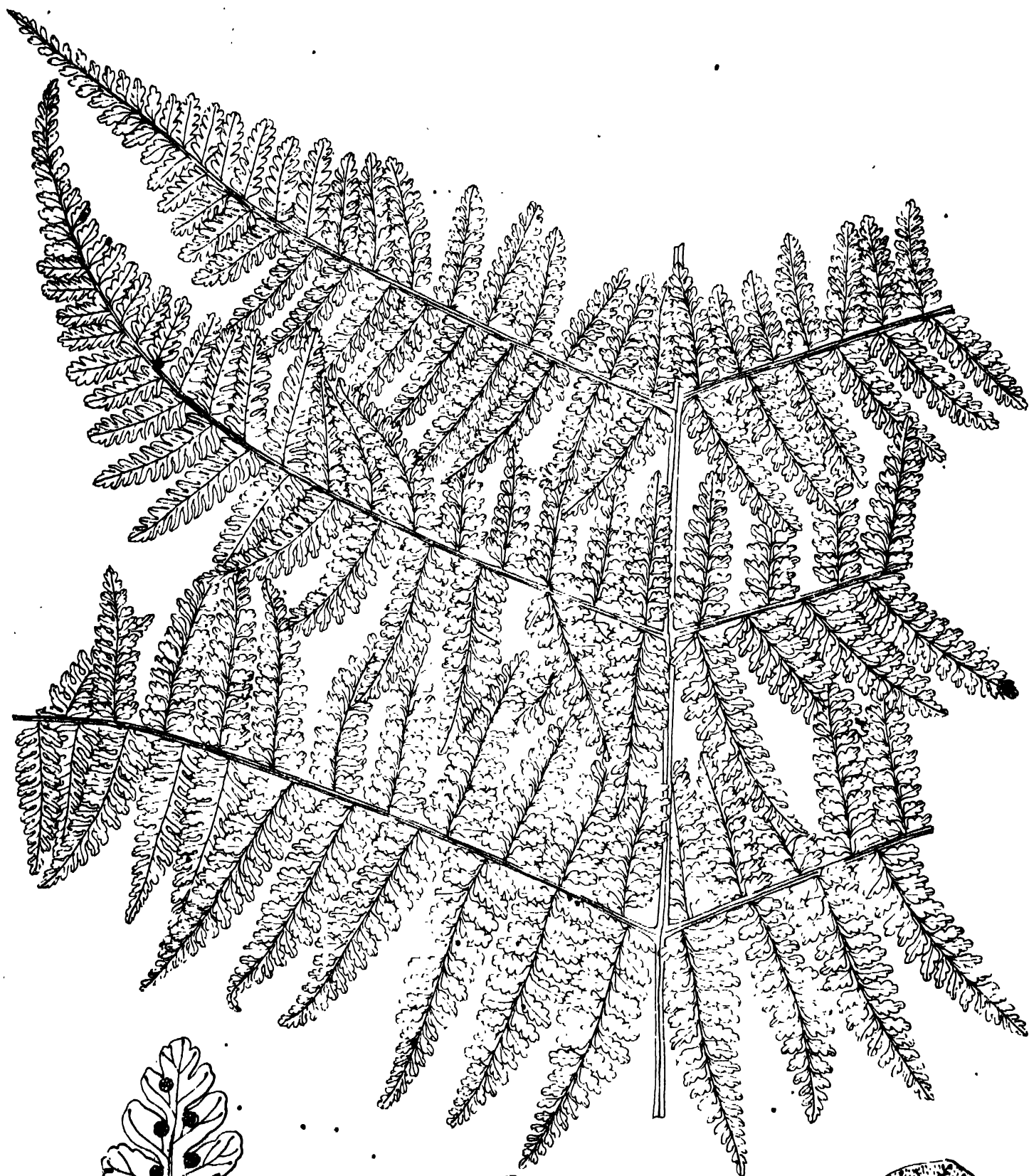
LASTREA.

LASTREA OBTUSILOBA (Baker) ; stipes 1-2 feet long, firm, erect densely clothed with large, ovate, concolorous scales ; frond 3-4 feet long ; $1\frac{1}{2}$ -2 feet broad, lower pinnae often 1 foot long 6 inch broad ; pinnules lanceolate, most of the segments of the lower ones distinct, ovate-oblong, cut down to the rachis into oblong rhomboidal entire lobes, the largest $\frac{1}{4}$ inch deep, $\frac{1}{8}$ inch broad ; texture herbaceous, turning blackish when dried ; rachises slightly scaly, the upper ones, and especially the under surface, more or less glandular ; lower veinlets of the entire lobes forked, sori medial. *Hook., Sp. Syn. Fil. p. 284.*

The specimen figured is from Ceylon (C. P. 3142), it is nearly allied to *L. ferruginea* (Bedd.) and to *L. Blumel* Hook. (which is the "intermedia" of Blume).

Hab. Ceylon (at Newera Ellia and Maturatte).

PLATE No. CCXCVI.



Lahria obtusiloba (Baker.)

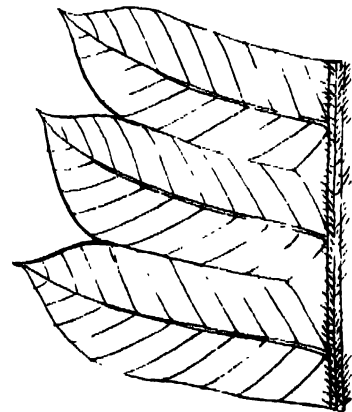
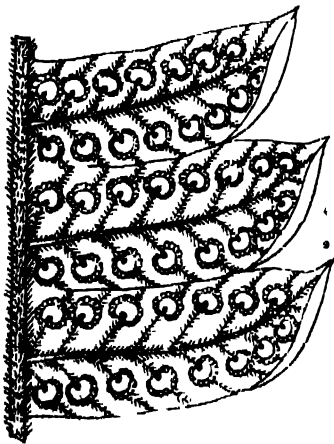
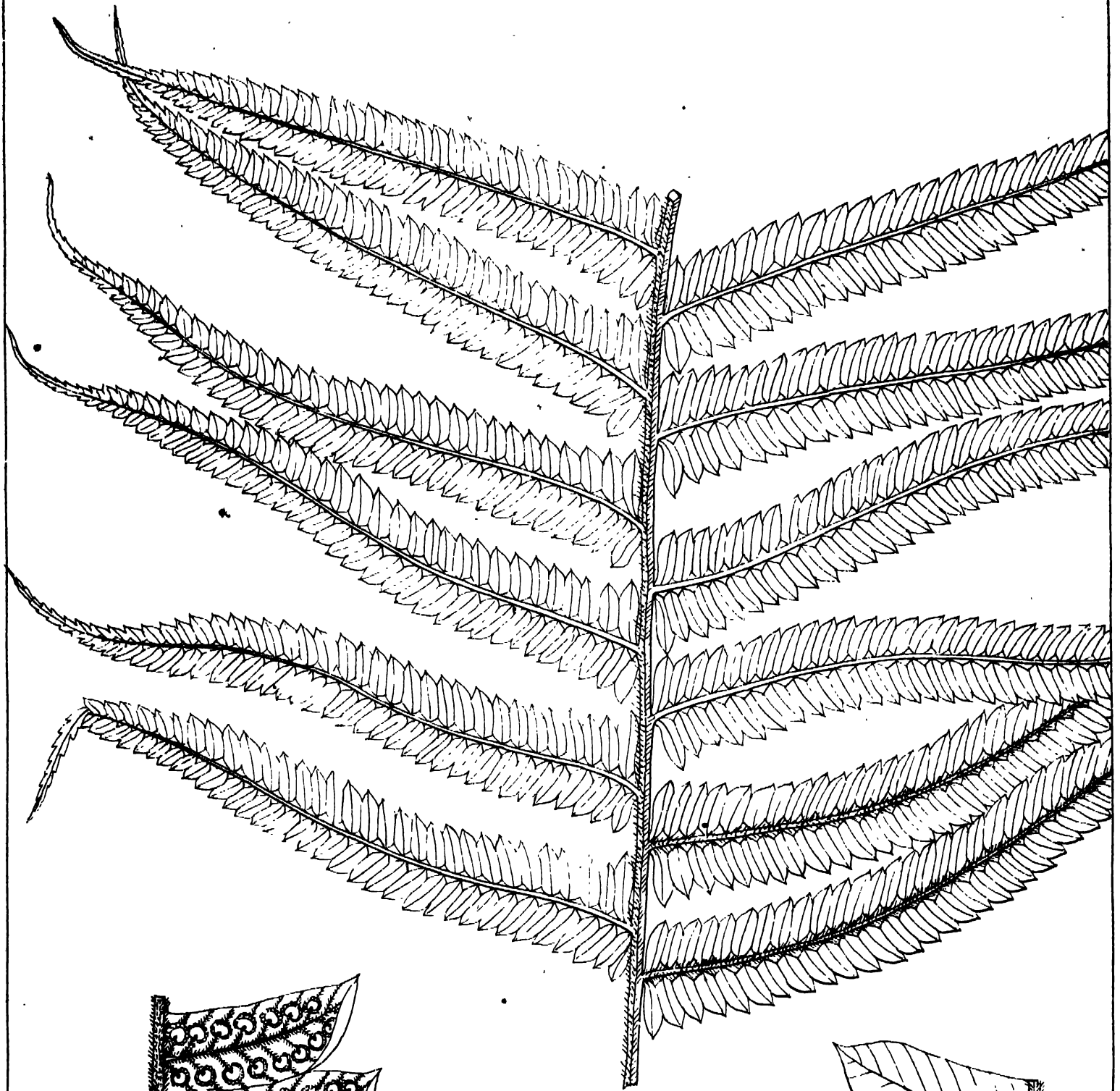
NEPHRODIUM.

NEPHRODIUM ARIDUM. (Don.); stipe 1 foot or more long, erect, naked; frond 3-4 feet long 12-18 inch broad; pinnae 6-9 inch long $\frac{3}{4}$ -1 inch broad, cut about one-third of the way down into subtriangular sharp-pointed lobes; texture coriaceous; rachis and lower surface naked or slightly hairy; veinlets 8-10 on a side; sori in rows about midway between the midrib and edge; capsules naked.—*Aspid. Don. Prod. Fl. Nep. p. 4*;—*A. venulosum, Wall.*;—*A. obscurum Bl.*;—*Hook. Syn. Fil. p. 291.*

The specimen figured is from the Himalayas. It is included by Sir W. Hooker in the "*Sp. Filicum*" under *Nep. unitum*; but separated in the "Synopsis."

Hab. North India, Malay Peninsula, Philippines.

PLATE No. CCXCVII.



Nephrodium aridum (Don.)

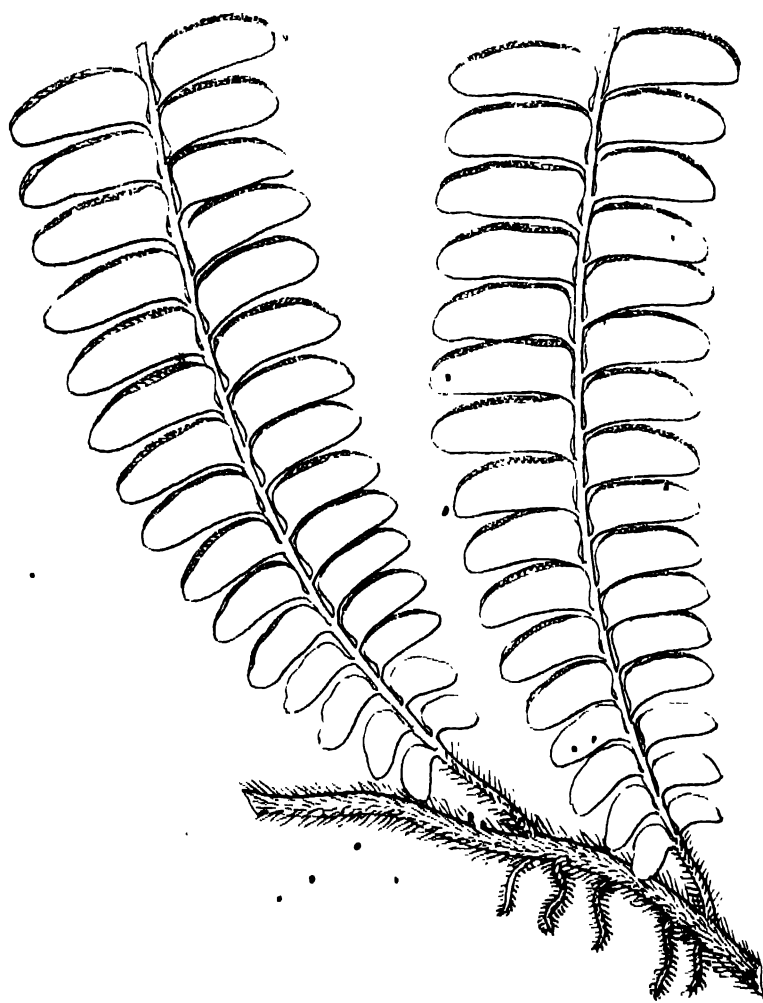
LINDSCEA.

LINDSCEA SCANDENS. (Hook.) rhizome stout, wide creeping, scandent, paleaceous; frond 9-12 inch long, $1\frac{1}{2}$; 1 inch broad, simply pinnate; pinnæ $\frac{3}{4}$ inch long, $\frac{1}{2}$ inch broad, the lower line slightly decurved, the upper rounded, entire, the point broadly rounded, placed in a long row close together, but not imbricated; texture pellucido-herbaceous; costa marginal; veins free $\frac{1}{2}$ sori in a continuous marginal line. *Hook. Sp. 1. p. 205 t. 63. B. ;—Syn. Fil. p. 106.*

The figure is taken from Sir W. Hooker's "Sp. Fil."

Hab. Malay Peninsula, Philippines, Luzon, Isle of Leyti.

PLATE No. CCXCVIII.



Lindsaea scandens (Hook.)

Lindsaea scandens

Dumphy, Fiske

SCHIZOLOMA.

SCHIZOLOMA CORDATA. (Gaud.) Rhizome short-creeping, stipe 3-6 inch long, slender, erect, wiry; barren frond 2-3 inch long 1-1½ inch broad, cordate-oblong, quite entire, fertile one 3-6 inch long, linear entire or forked; texture coriaceous; sori in a continuous marginal line, veins anastomosing.—*Hook. Sp. 1. p. 219. t. 66 A.*

The figure is taken from the "Sp. Filicum."

Hab. Malay, Peninsula.

PLATE No. CCXCIX.



Schizoloma cordata (Gaud.)

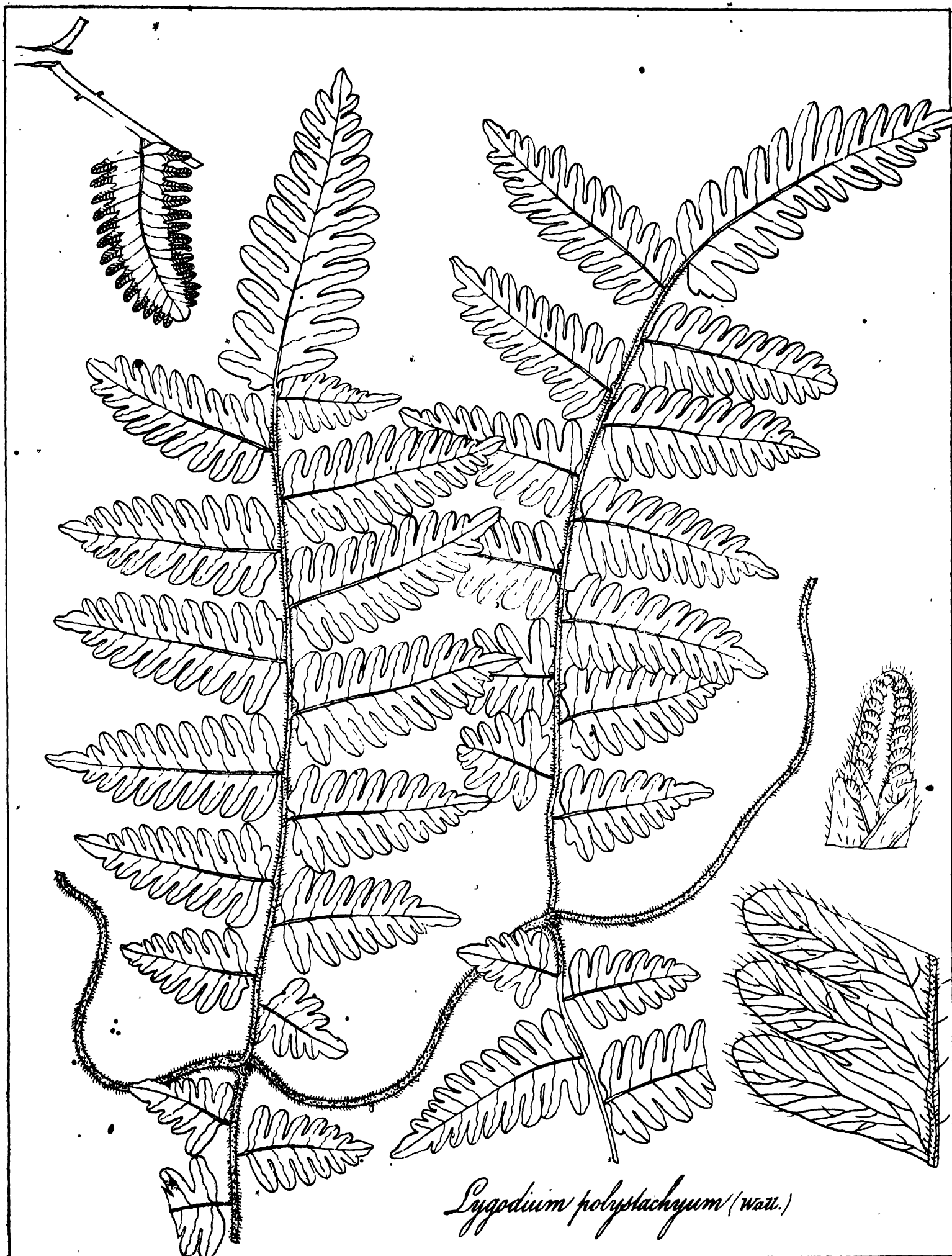
LYGODIUM.

LYGODIUM POLYSTACHIUM. (Wall.) Stem creeping slightly pilose, fronds conjugate pinnate, membranaceous, pinnæ petiolate furnished with a tufted gland at the apex of the petiole, deltoid-ovate to lanceolate, glandular, pilose on the rachis of pinnæ, costæ and veins pinnatifid more than half down to the costa, segments with a rounded apex, entire or slightly crenate, costa of the pinnæ and central vein (or costule) of segments flexuose, veinlets simple or forked, fertile segments contracted.

The specimen figured is from Birmah (Parish.)

Hab. Birmah, Malay, Peninsula.

PLATE No. CCC.



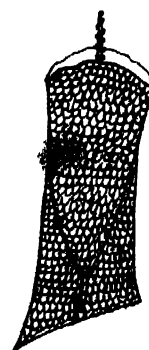
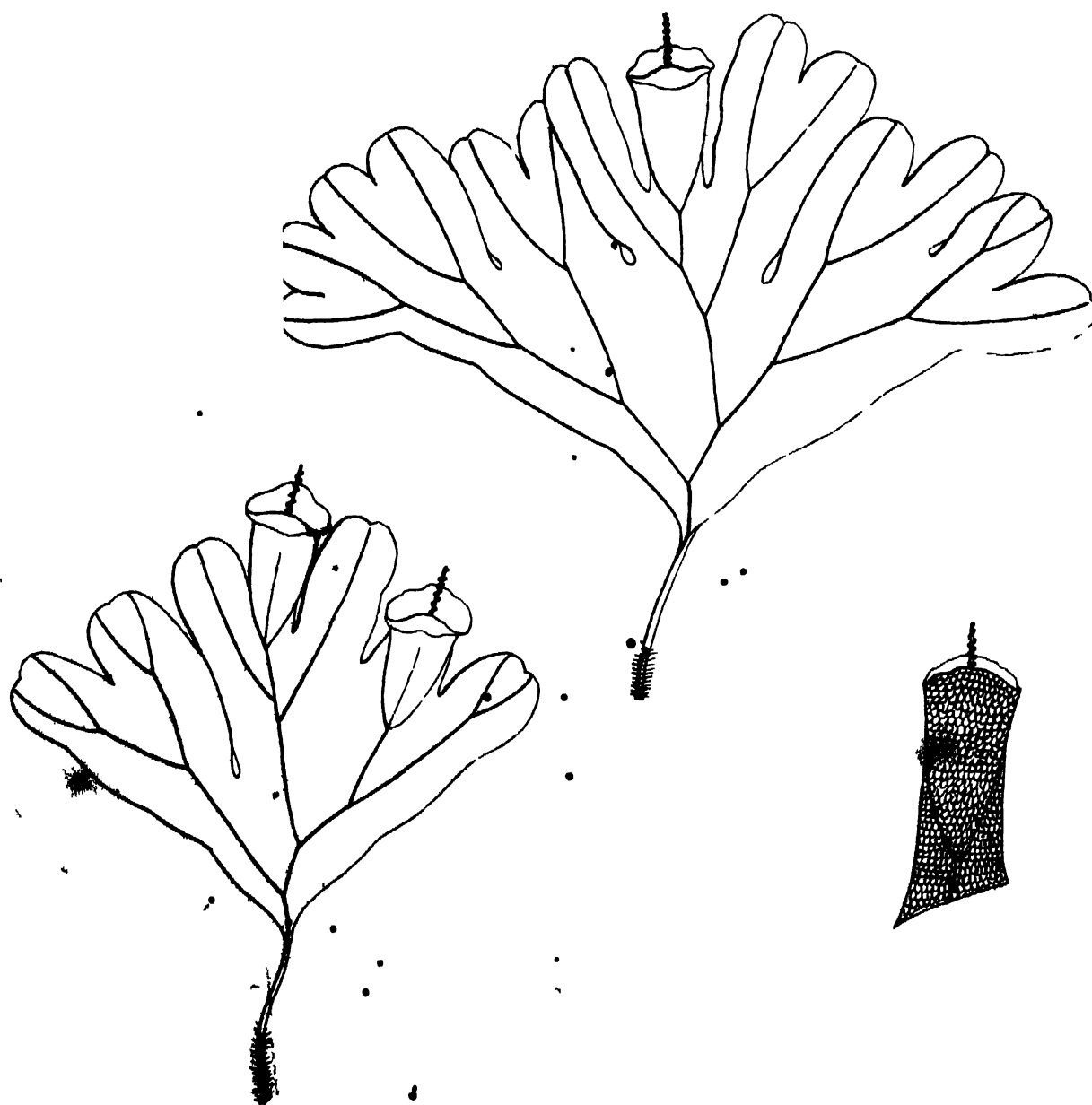
Lygodium polystachyum (Walt.)

TRICHOMANES.

TRICHOMANES DIGITATUM. (Swartz) Stipe slender naked or hairy at the base $\frac{1}{2}$ an inch long, fronds glabrous or ciliate up to 2 inches long by $\frac{1}{2}$ to 1 inch broad, very irregular in general outline, more or less deeply pinnatifid, segments 1-4 fid, lobes rounded obtuse with a single vein to each, no spurious venules, sori terminal in the segments, involucre cup-shaped quite sunk, the mouth dilated, slightly 2-lipped. *Hook. Sp. Fil.* 1 p. 119, —T lanceum. *Bory.* ;—T flabellatum and nitidulum *Van den Bosch.*

Hab. Northern India, Mauritius, Bourbon, Java, and Polynesian Islands.

PLATE No. CCCI.



Spichomanes digitalum (Sm.)

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TRICHOMANES.

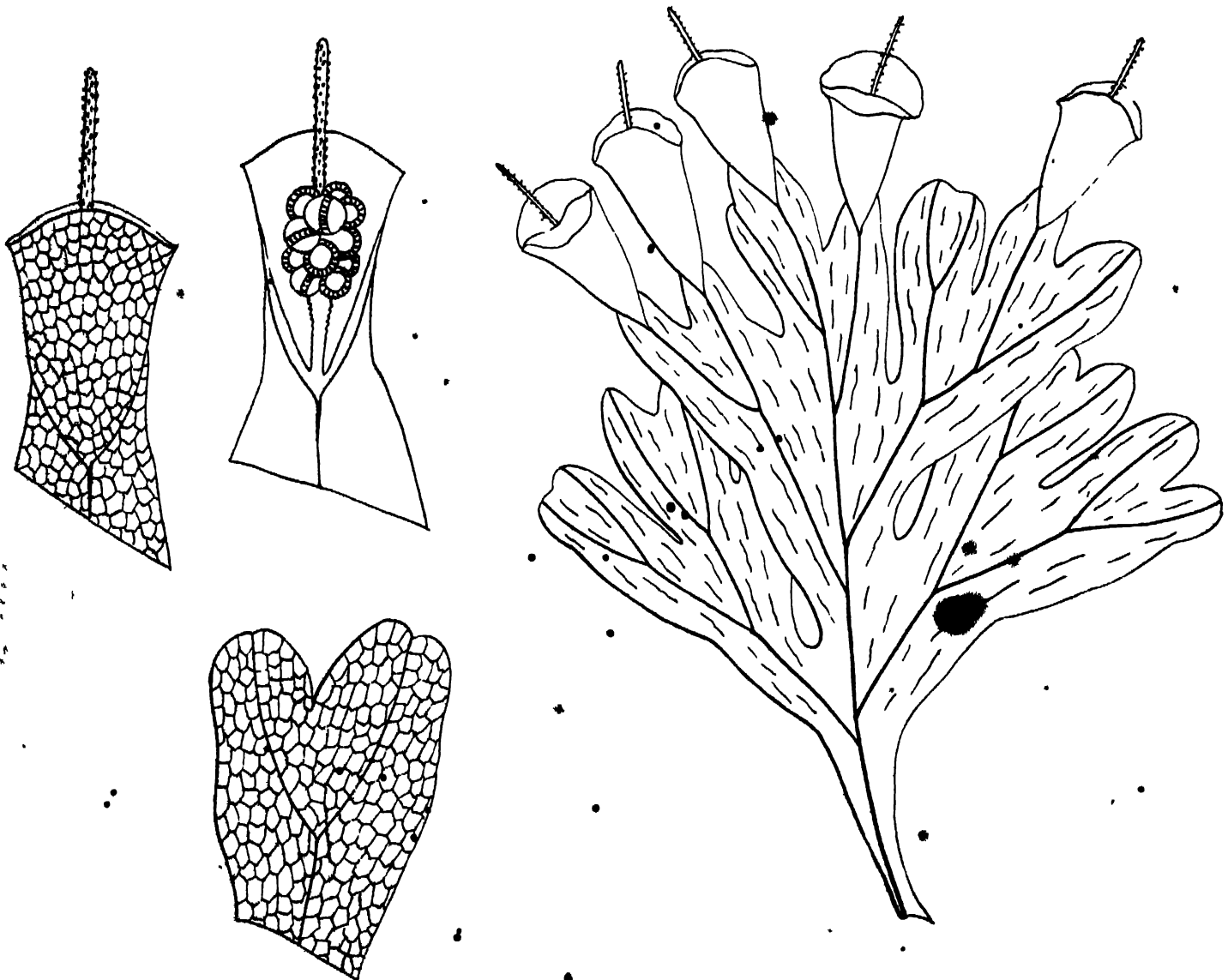
TRICHOMANES PUSILLUM. (Sw.) Rhizome creeping tomentose ; fronds with a broadly winged stipe, generally about 1 inch long, very irregular in general outline, more or less deeply pinnatifid nearly down to the midrib ; segments again more or less deeply divided obtuse and rounded at the apex of the segments, veins erecto-patent from a central costa, 1 to each lobe of the segments ; spurious venules lineolate numerous, very short and detached, sori numerous terminal at the apex of the lobes, tube almost entirely exserted, only the base being sunk in the margin of the frond, mouth dilated. *Sw.* ;—*Hook. Sp. Fil.* i. p. 117 ;—*Trich. quercifolium. Hook and Grev. Ic. Fil.* t. 115.

The specimen figured is from Moulmein (Parish) ; it has been published under the name of *T. viridans* by Kuhn *Linnæa*, 1868, p. 389.

Hab. Moulmein, Tropical South Africa, from Mexico and the West Indies to Brazil, and Peru, Kranz Kop Natal.

•

PLATE No. CCCII.



Trichomanes pusillum (Sw.)

TRICHOMANES.

TRICHOMANES HENZAIANUM (Parish.) Rhizome creeping tomentose, stipes 1-2 lines long, fronds up to $\frac{1}{2}$ an inch or a little more long, very thin in texture, orbicular to linear, sub entire to trifid and variously lobed ; veins thick and prominent, but often tapering off and thin towards the margin ; spurious venules very numerous, no marginal band of reticulations, involucres 1—6 to each frond, terminal and entirely sunk in the frond ; the mouth free and more or less 2-lipped. *Parish in Hook, 2 cent. Ferns t. 1 ;—not Bedd. Ferns of British India, pl. 183, which is T. Motleyi.*

The specimen figured is from Birmah, (Moulmein and Pegue).

Fig. *a.* The nominal form ; *b.* magnified fronds of the same.

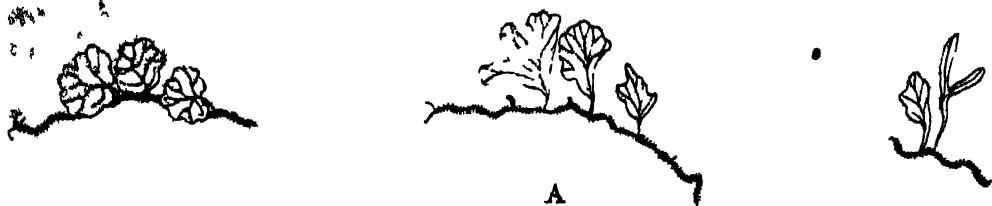
„ *c.* A larger variety.

„ *d* A magnified frond of *T. Neulgherrense* from Ceylon, (*T. muscoides*. Thw. C. P. 2986), shewing that the spurious venules are fewer than in the Nilgiri plant, but that the same marginal band is present.

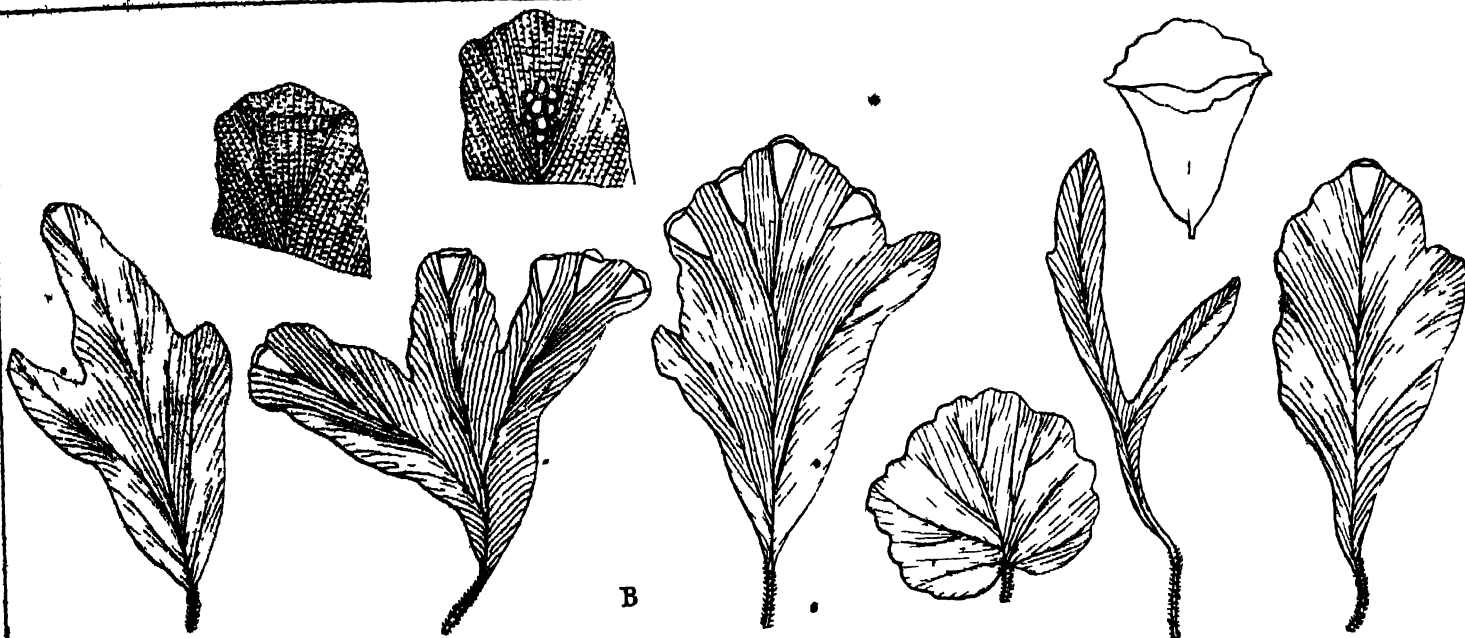
„ *e* A magnified frond of *T. Neulgherrense* from the Nilgiris, shewing the numerous spurious venules, and marginal band not correctly shewn in the figure in the *Ferns of Southern India* (Pl. VI.)

„ *f.* A magnified frond of *T. Motleyi* (Van den Bosch) from Birmah, shewing the few spurious venules which are sometimes present though sometimes wanting, and which are not represented in Pl. 183 of this work, where this species is figured under the name of *T. Henzaianum*. It has just been discovered in Ceylon by Mr. Thwaites, and is also found in Borneo and New Caledonia.

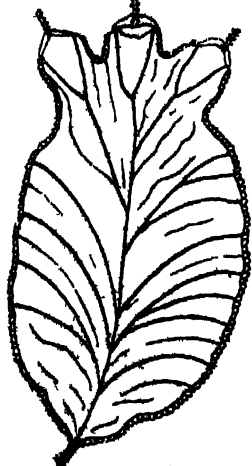
PLATE No. CCCIII



A



B



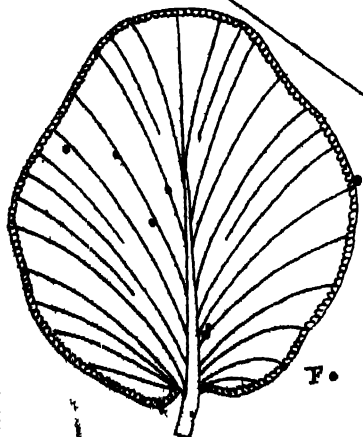
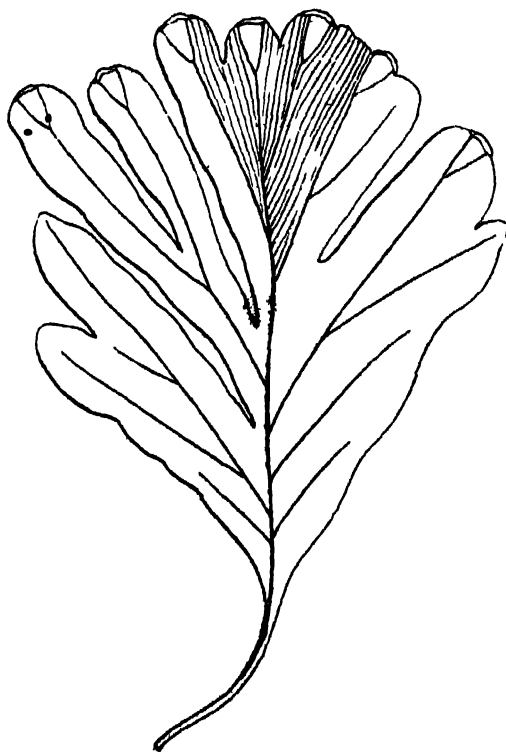
D



Trichomanes vulgatum



C



F.

Trichomanes Holleyi

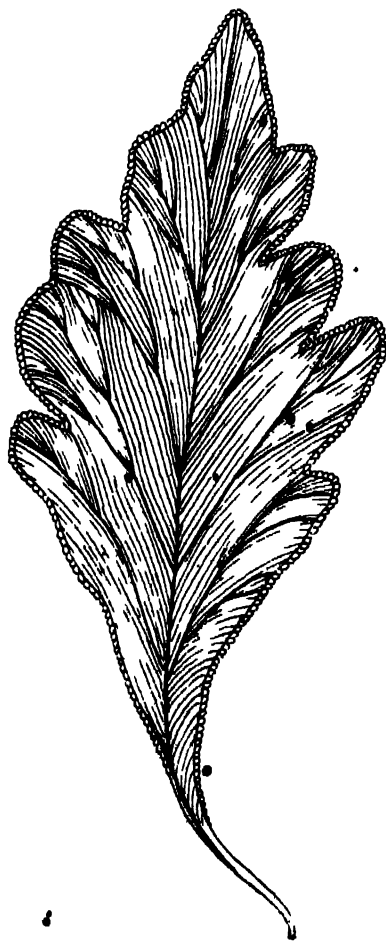
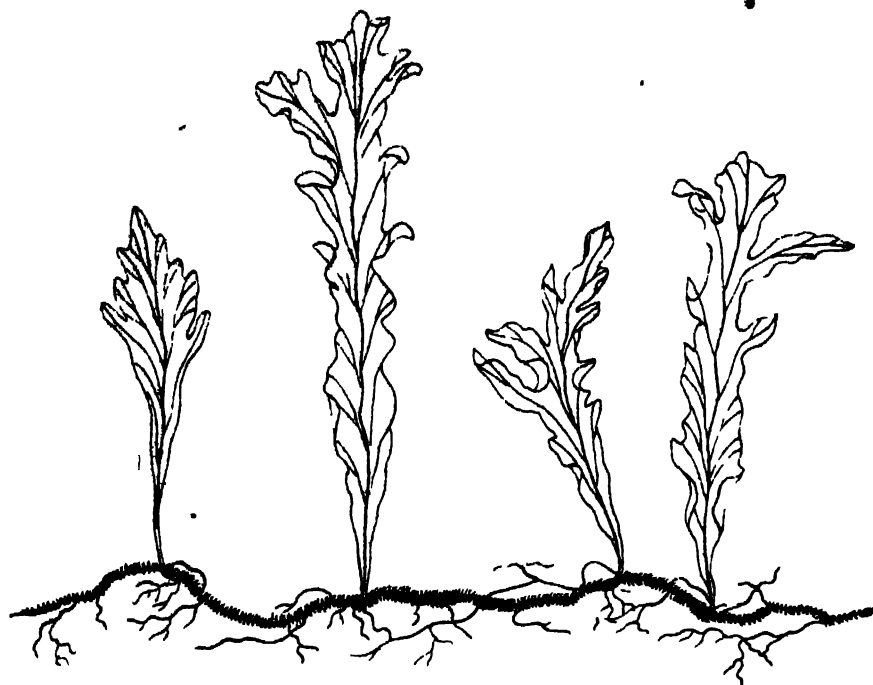
TRICHOMANES.

TRICHOMANES MUSCOIDES. (Sw.) Rhizome creeping tomentose, frond shortly stalked 1-3½ inches long, ¼ to ½ inch broad, varying from linear to suborbicular in outline, and from subentire to variously lobed or pinnatifid, veins prominent and thick, spurious venules very numerous and running at the margin into a vein and marginal band of reticulations (as in *Neilgherrense*); sori 1-8 terminal on the lobes, tube sunk in the frond, mouth free but scarcely 2-lipped. *Hook. Sp. i. p. 117*;—*Syn. Fil. 75.*

Hab Northern India, Tropical America, Polynesia, Africa.

Trichomanes Neilgherrense may probably be a small form of this species.

PLATE No. CCCIV.



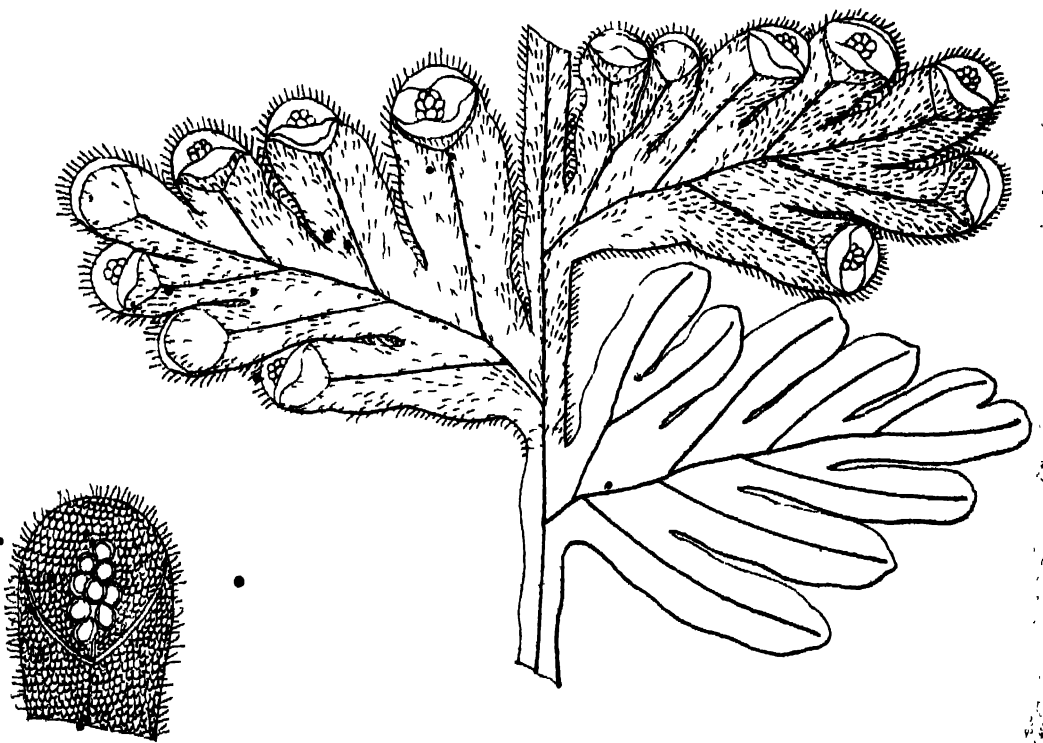
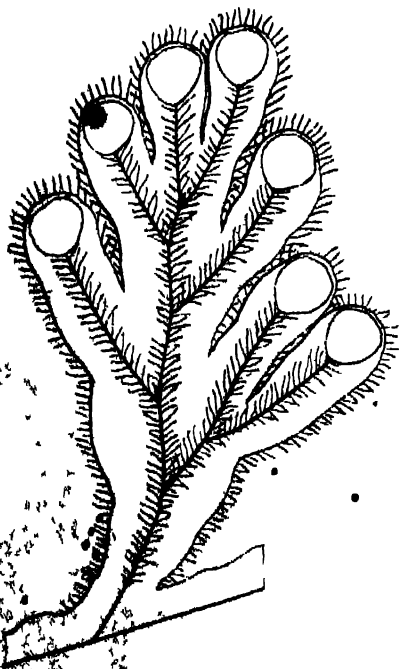
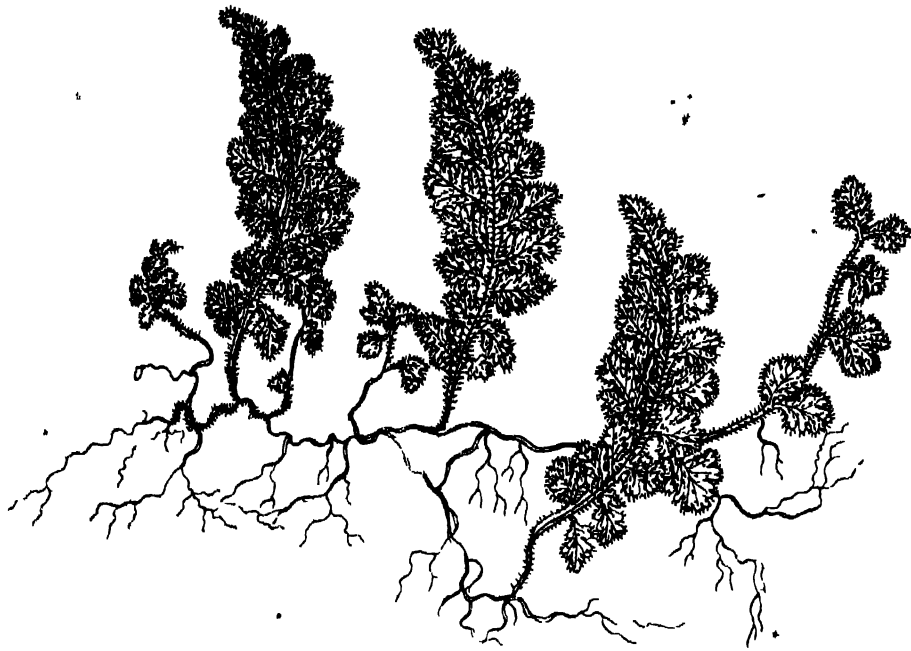
Thichomanes muscoides (Sw.)

HYMENOPHYLLUM.

HYMENOPHYLLUM CILIATUM (Swartz). Stipes 1-2 inches long, very hairy, ciliated, and decurrently winged above, fronds oblong acuminate pinnatifid, with the pinnæ again pinnatifid; 2-6 inches long 1 2 inches broad at the centre, main rachis broadly winged throughout, pinnæ oblong or rhomboidal cut down into simple or forked linear oblong segments, sori 2-12 on a pinna at the apex of the segments, involucre immersed suborbicular, valves divided above half way down and ciliated. *Hook. Sp. Fil.* i. 88, —*Syn. Fil.* 68 and 451, —*H. Boryanum*. *Willd.*; —*Hk. Sp.* i. 89 t 31 c., —*H. Plumieri*. *Hook. and Grev. Ic. Fil.* t. 123.

Hab. Sikkim—Himalaya, Tropical America, West Tropical Africa, Zambesi, Mauritius, Madagascar, Bourbon, Seyonelles, Johanna Island.

PLATE No. CCCV.



Hymenophyllum ciliatum (Sw.)

HYMENOPHYLLUM.

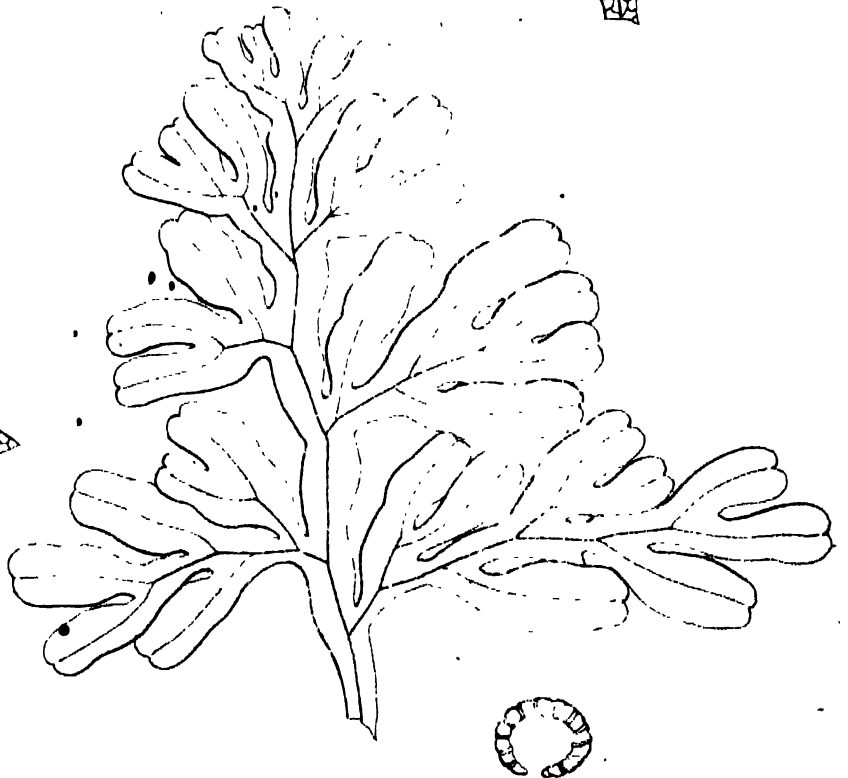
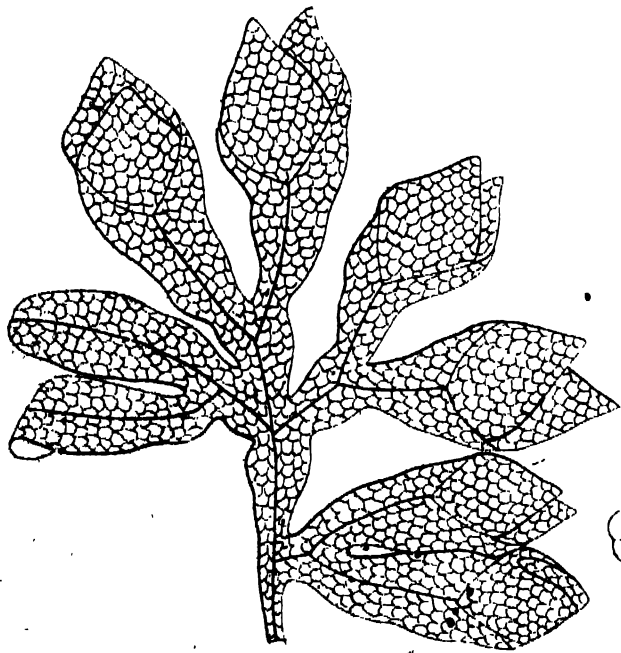
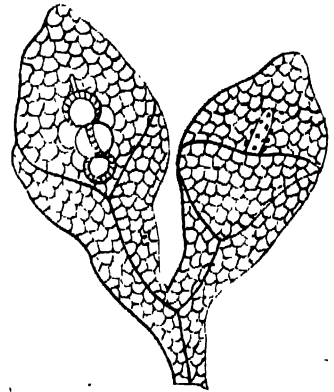
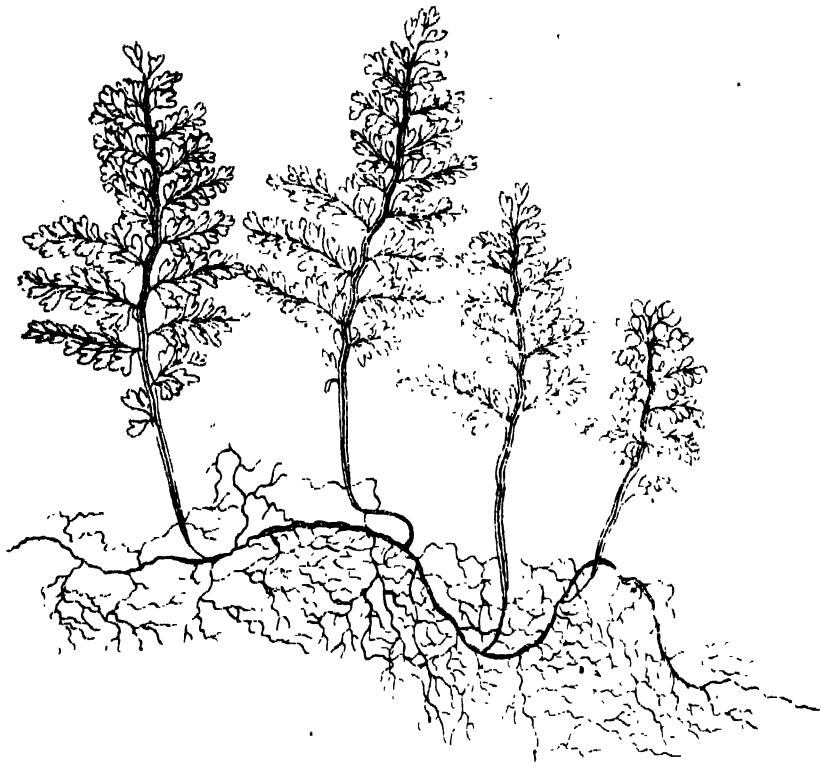
HYMENOPHYLLUM POLYANTHOS. *var. β . minor.* (Bodd.) Stipes 1-2 inches long slender naked, sometimes winged towards the apex, fronds 2-4 inches long about 1 inch broad flaccid, ovato-oblong tripinnatifid; main rachis naked winged throughout, pinnae nearly horizontal, triangular-rhomboidal, about $\frac{1}{2}$ inch long, divided down to a narrowly winged rachis into several pinnules, the lower of which are cut into several simple or bilobed obtuse lobes; sori terminal on the lobes of the upper pinnules, involucre divided more than half way down, the valves rounded or pointed entire.

This is perhaps a distinct species from the Himalyan and Birmese polyanthos, figured at Pl. 280 of this work.

The specimen figured is from the Anamallays.

Hab. Anamallays 6,000 feet; common on trunks of trees near the head of the Toracadu river.—Ceylon, C. P. 3279.

PLATE No. CCCVI.



Hymenophyllum polyanthos (var. *B. minor* Kuhn.)

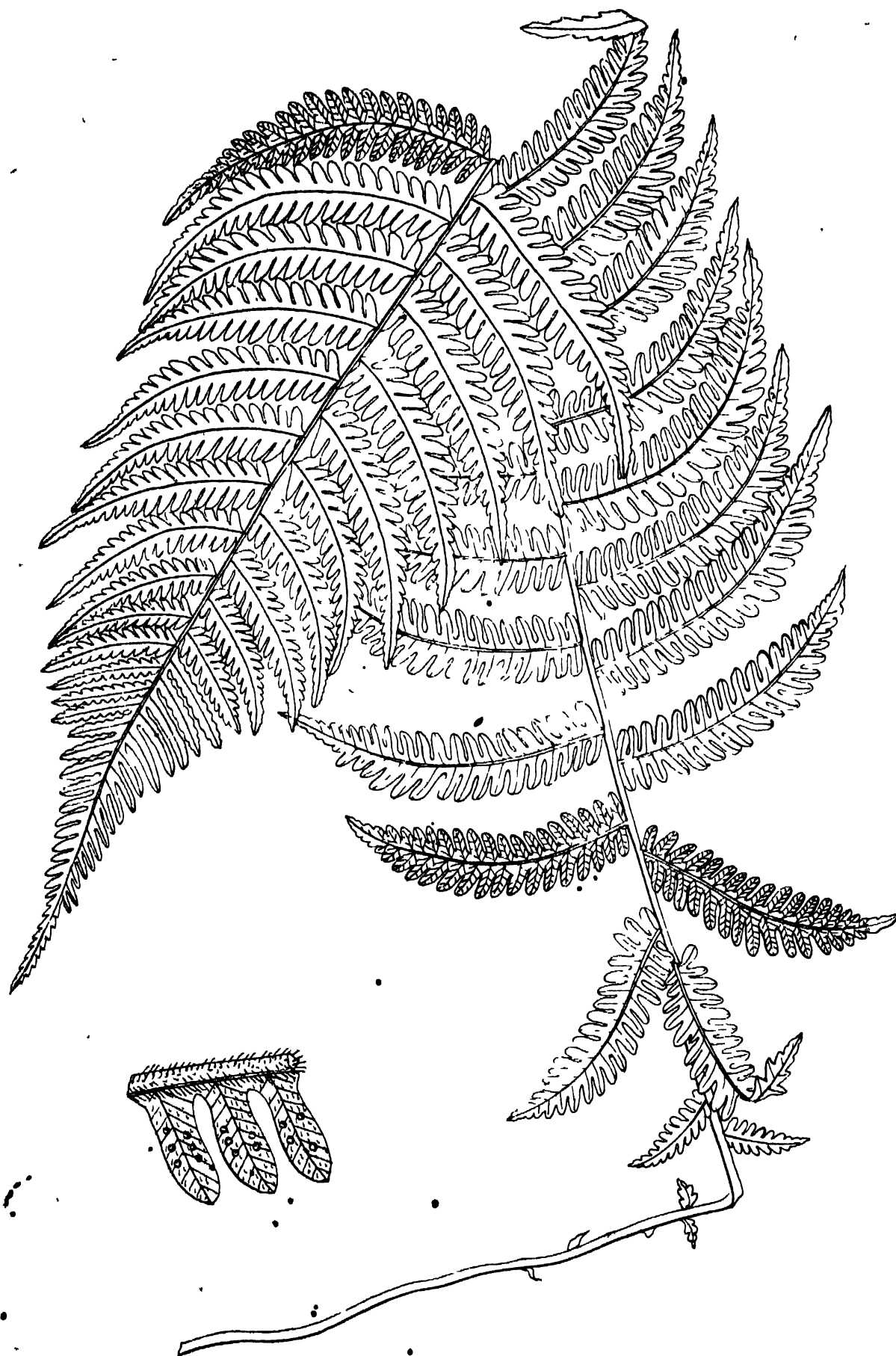
LASTREA.

LASTREA CANA. (Wall. ?) Stipes densely tufted, 6-8 inches long, slender finely villose ; fronds pinnate 8-12 inches long 3-4 inches broad, slightly villose on both sides, central pinnæ 2 inches long, $\frac{1}{2}$ inch broad, gradually narrowed from the base to the apex, cut down nearly to the rachis into close entire or slightly crenated lobes $\frac{1}{8}$ of an inch broad ; lower pinnæ distant and dwindling down gradually, texture herbaceous, rachis slender finely villose, veinlets 6-8 on each side of the costules simple ; sori medial or submarginal, involucre thin fugacious. Wall. *Baker Syn. Fil.* 267.

The specimen figured is from the Himalayas, (Dr. Thomson.)

Hab. Himalayas.

PLATE No. CCCVII.



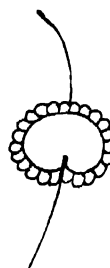
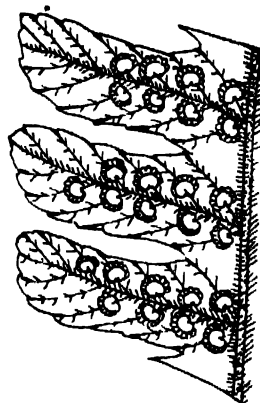
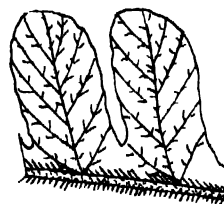
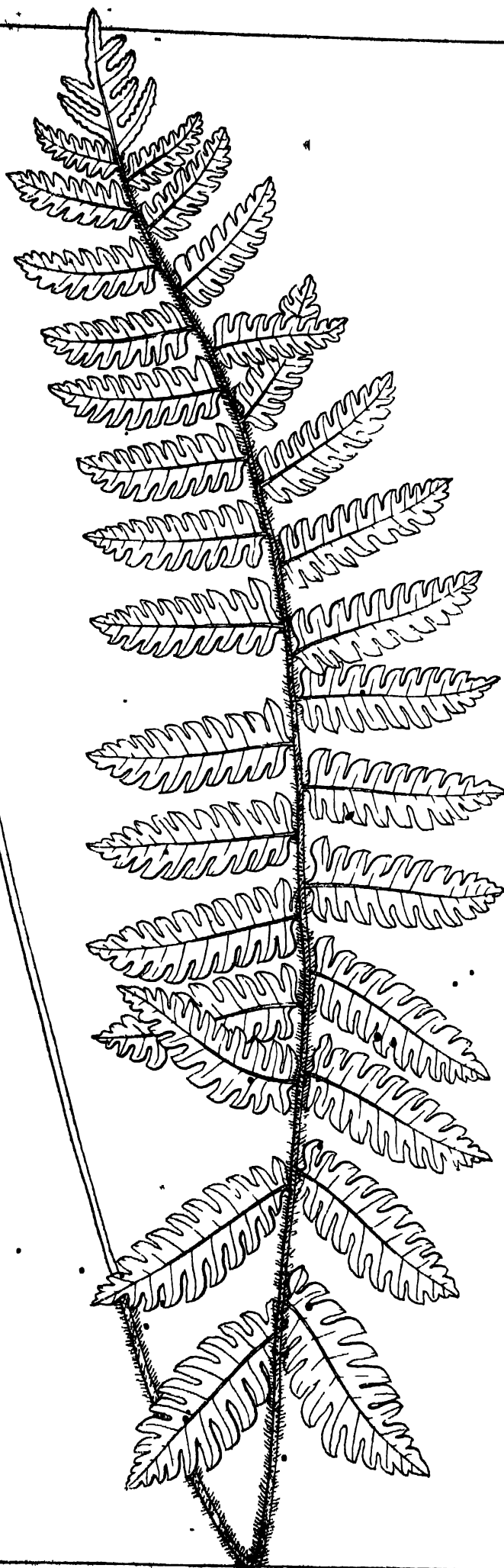
Lashaea cana (Baker.)

LASTREA

LASTREA SERICEA. (J. Scott.) Rhizome erect tufted palaceous furnished with numerous wiry roots, fronds 9-13 inches long about 3-4 inches broad, oblongo-lanceolate pinnate with the pinnæ pinnatifid, membranaceous, rachis pubescent; pinnæ $1\frac{1}{2}$ -2 inches long, subsessile oblong from a broad base subacute, pinnatifid about half way down to the costa (lower pairs deflexed); costa pubescent on both sides and primary veins furnished with a few hairs, segments oblong obtuse slightly falcate, crenate, ciliate, veins pinnate, veinlets 5—7 pairs to each segment alternate or opposite simple or occasionally 1-forked, slightly thickened at the apex, the 3-4 lower pairs soriferous a little above the base—indusium glabrous.

The specimen figured is from Chittagong, (J. Scott.)

PLATE No. CCCVIII.



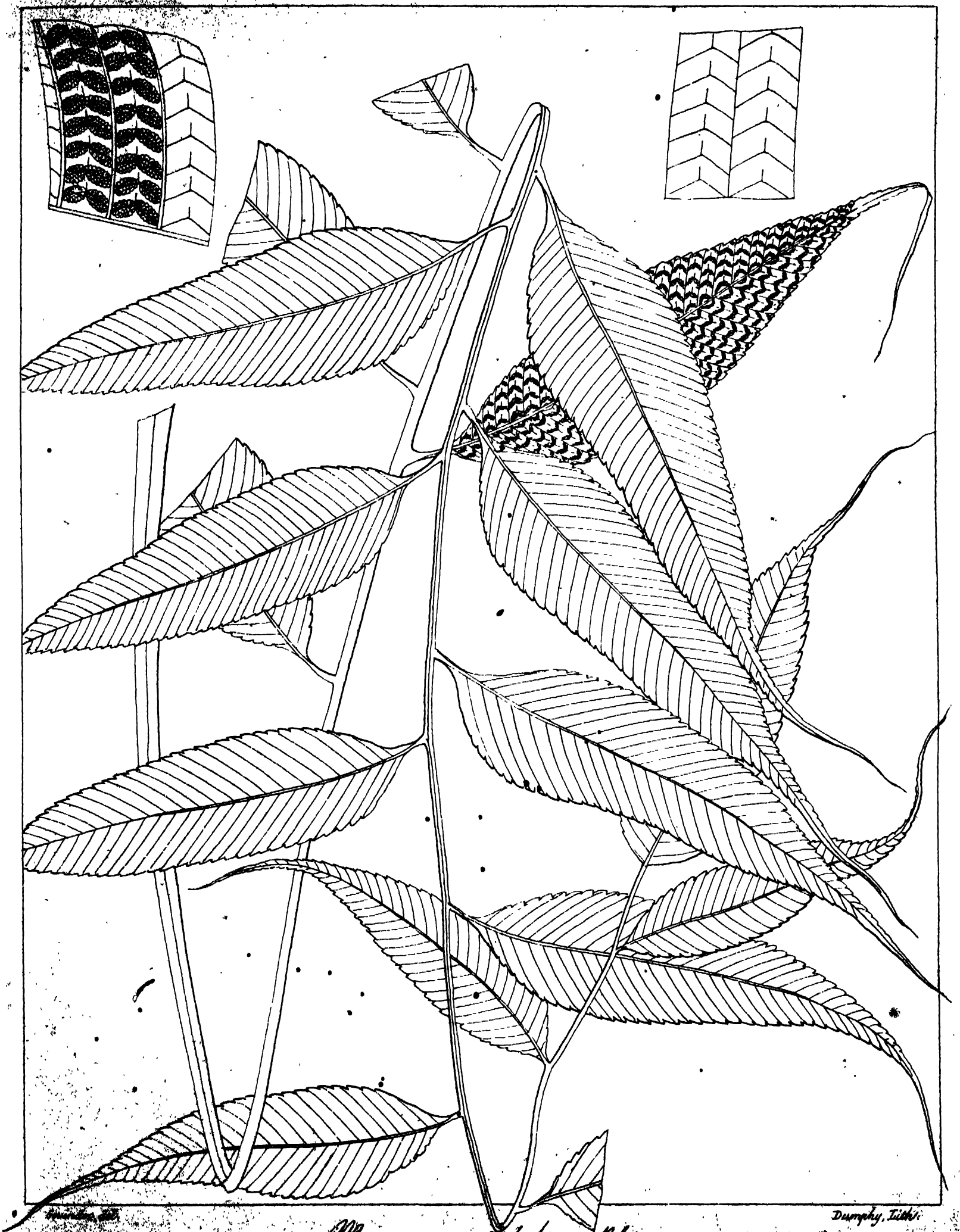
MENISCIUM.

MENISCIUM CUSPIDATUM. (Bl.) Stipes 1-2 feet long stout naked ; fronds 2-4 feet long 1 foot or more broad, pinnae glabrous rather distant petioled lanceolate attenuated at both ends, ending in a very long acumination 6-9 inches long, 1-3 inches broad crenate at the margin, texture subcoriaceous, veins approximated, connivent ; transverse veinlets from 6 to 20 pairs on each side, venules generally free and not joining the base of the arceoles above them ; sori copious, entirely covering the transverse veinlets. *Baker Syn. Fil. p. 392 ;—Blume t. 45.*

The specimen figured is from the Himalayas.

Hab. Himalayas, Malacca, Philippines.

PLATE No. CCCIX.



Platanus cuspidata (Pl.)

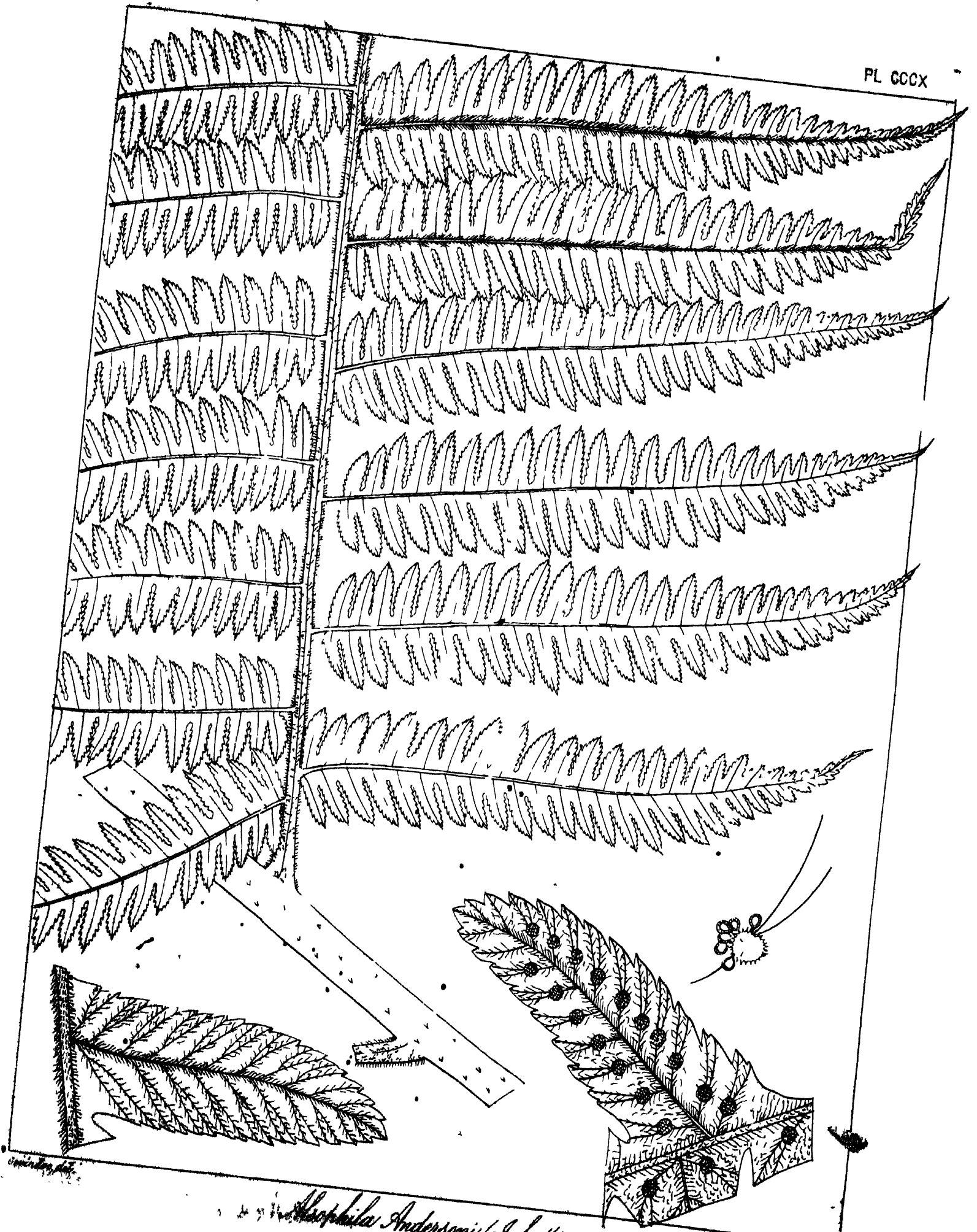
ALSOPHILA.

ALSOPHILA ANDERSONII. (J. Scott.) Arborescent, stipes muricato-asperous ebeneous, rather densely clothed below sparingly upwards with lanceolate-subulate deciduous scales, main rachis slightly scabrous below, and as well as the partial rachis tawny villous above, fronds bipinnate ovato-lanceolate herbaceo-membranaceous pilose, primary pinnae oblongo-lanceolate, acuminate, pinnules oblongo-lanceolate, pinnatifid nearly down to the pilose rachis, with an attenuate serrated apex, segments broad-oblong slightly falcate gradually attenuated towards the apex, sharply serrated, veinlets simple or once forked, 10-12 pair to each segment, all except the upper 2-3 with a single sorus a little below the middle, veins copiously and veinlets sparingly furnished with long weak hairs.

The specimen figured is from Sikkim (Dr. Anderson), where it has lately been discovered in the tropical valleys about the Government Cinchona Gardens, at an elevation of 1,000 to 2,500 feet. It has been introduced into the Botanical Gardens in Calcutta, and was named by Mr. J. Scott. It is called "Pulal nock" by the Lepchas.

PLATE No. CCCX.

PL CCCX



Adiantum Andersoni (Schott.)

Dumphy, Tiller

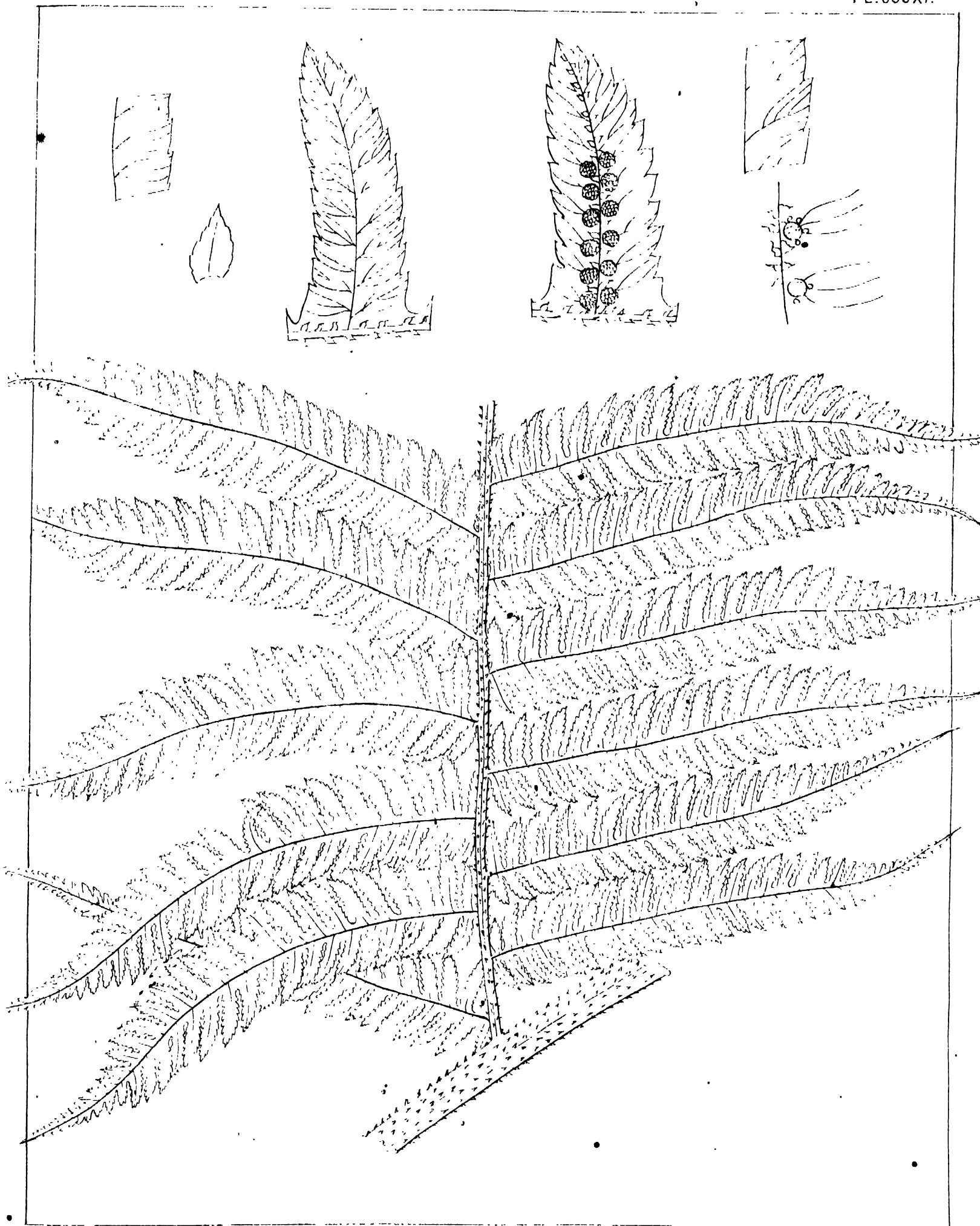
ALSOPHILA

ALSOPHILA DECIPIENS. (J. Scott.) Arborescent, stipes strongly aculeated, of a mahogany-brown color and at the base paleaceous, muricated furfuraceous and of a pale brown color upwards; fronds coriaceous glabrous greyish green (not glaucous) beneath partial rachis muricate and the costules of the pinnules and segments furnished with small membranaceous scales, primary pinnæ oblongo-lanceolate, acuminate pinnules pinnatifid down to nearly the rachis, segments linear oblong, acute falcate and serrated, with the margins more or less recurved particularly in the fertile ones, which thereby appear narrower than the others; veins forked or doubly forked or pinnate with 3, 4, 5 veinlets, sori close to the costule.

The specimen figured is from the tropical forests of Sikkim at an elevation of 2,000 feet above the sea, where it was lately discovered by Dr. Anderson and introduced into the Calcutta Botanical Gardens; it has been named by Mr. J. Scott. It is called "Pugsheck nock" by the Lepchas.

Alsophila Brunoniana, Plate LXXXVI of this work (a bad figure of a poor specimen), is probably the same as *Alsophila contaminans*. The *Alsophila contaminans* is called "Pulai" by the Lepchas; *Als. glabra*, "Pulai keep;" *Alsophila comosa*, "Pushen;" and *Alsophila latebrosa*, "Pugajeek."

PLATE No. CCCXI.



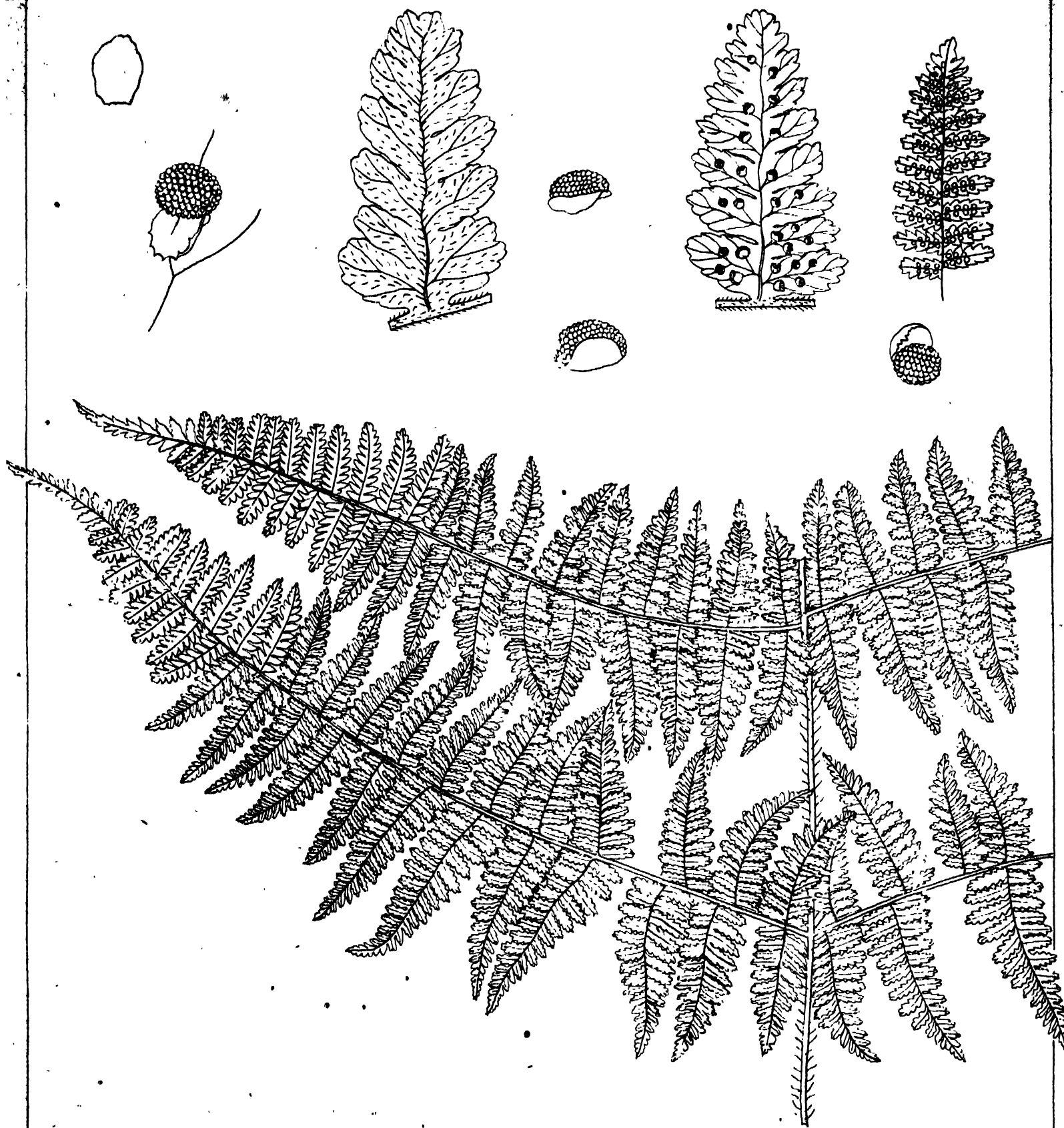
CYSTOPTERIS

CYSTOPTERIS SETOSA. (Bedd.) Caudex & stipe scaly 12-14 inches long, frond ample 1-3 feet long by 12-15 inches broad membranaceous, ovate, ovato oblong or deltoid, tripinnate with tertiary sessile pinnules pinnatifid, main and partial rachises scaly and segments furnished on both sides sparingly with longish weak shining hairs or nearly glabrous, primary pinnæ opposite or subopposite, 1-5 inches wide, linear lanceolate to oblong, secondary pinnæ alternate or opposite, in the more compound parts 1-2 inches long with sessile pinnules, which are again deeply pinnatifid into 5-6 segments, segments crenated or entire, veinlets simple or forked soriferous about the middle, involucre very membranaceous small scale-like ovate roundish ovate to oblong from a broad base fornicate not nearly covering the sorus fimbriate at the margin or entire, soon disappearing.

This is the Fern figured at Plate 262 of this work as *Lastrea setosa*, (drawn from aged specimens from the Moulmein mountains). I have just received fine young specimens from Dr. Jerdon collected in Sikkim, which clearly shew that it is not a *Lastrea* but a *Cystopteris*; so I publish a fresh plate. The involucre proceeds from below the sorus and does not cover it in its youngest state. The plant mentioned under *Lastrea scabrosa* at page 283 of Hooker's *Synopsis Filicum* is probably this species.

Hab. Moulmein mountains, Sikkim—Himalaya.

PLATE No. CCCXII.



Cystopteris selosa (Bidd.)

MICROLEPIA.

MICROLEPIA PTEROPUS. (Bedd.) Caudex stout creeping, densely clothed with brown very membranaceous smooth scales, stipes 10-15 inches long furnished as are the main and secondary rachises with a few scales similar to those on the caudex, fronds deltoid ovate coriaceous-membranaceous, tripinnate 20-25 inches long, 10-15 inches broad; main rachis winged towards the apex, primary pinnæ petiolate alternate gradually acuminate from the base, rachis winged from the apex to nearly the base, secondary pinnæ alternate petiolate, with their rachises winged to the base and puberulous on both sides, especially above, and furnished with a few scales in under side; tertiary pinnæ acuminate pinnatifid nearly to the base, segments acute much larger on the upper margin pinnatifid, slightly puberulous on the costa, veins pinnate, sori 1-10 on each segment of the tertiary pinnæ, involucre subreniform fimbriated.

Hab. Himalayas (Dr. Jerdon.)

PLATE No. CCCXIII.



Microlepia pteropus (Redd.)

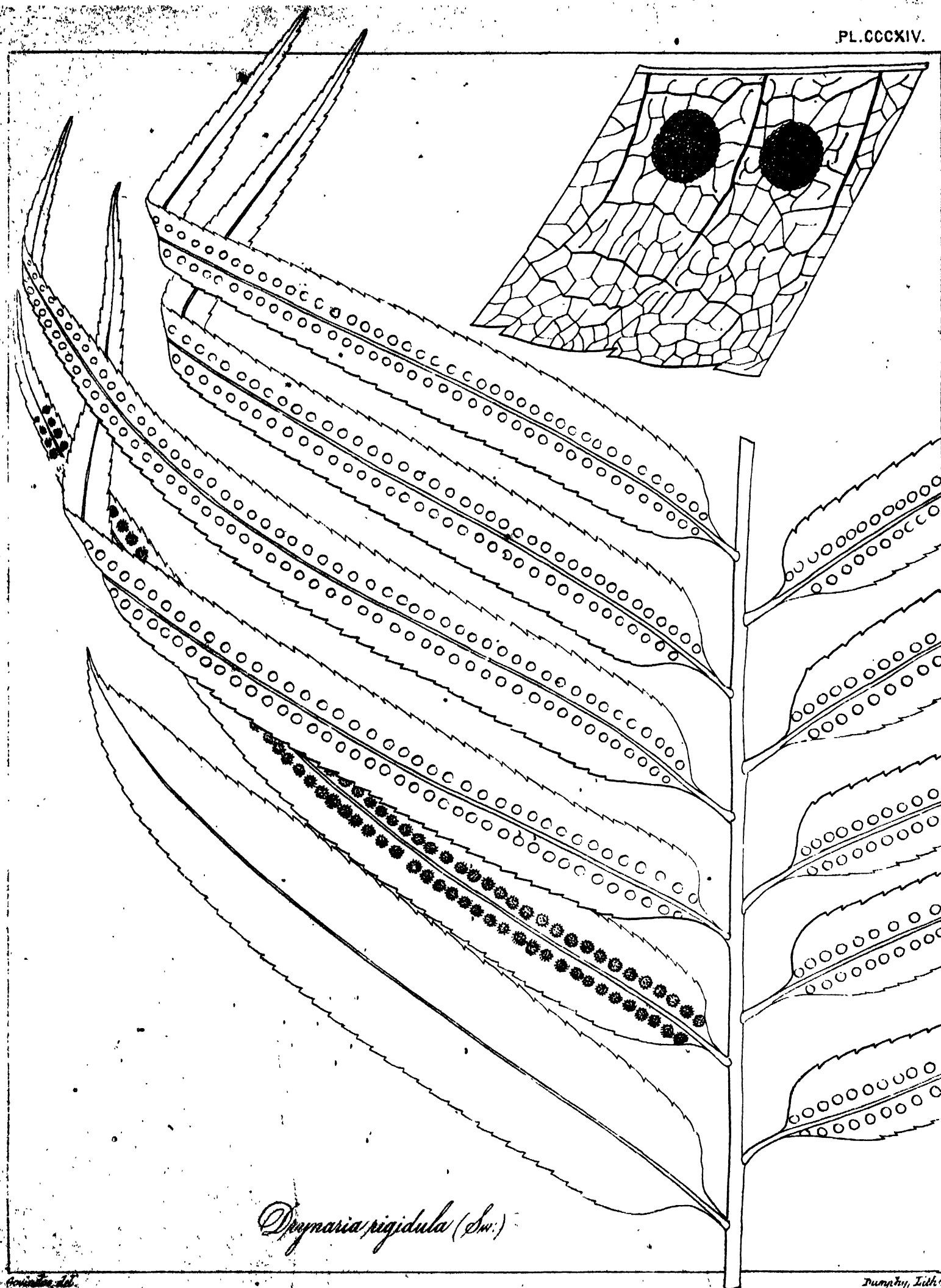
DRYNARIA.

DRYNARIA RIGIDULA. (Sw.) Rhizome stout creeping, the scales fibrillose dark glossy brown ; fronds dimorphous the barren ones sessile, 6-9 inches long 3-4 inches broad, cut down $\frac{1}{3}$, $\frac{1}{2}$ way to the rachis into blunt lobes, the fertile ones 2-4 feet long, 12-18 inches broad, long-stalked pinnate ; pinnæ 1 inch or more apart articulated on the rachis, oblongo-linear narrowed and stalked at the base 6-12 inches long $\frac{1}{4}$ - $\frac{3}{8}$ inch broad, the point acuminate, the edge more or less deeply inciso-crenate, texture subcoriaceous, rachis and both sides naked, main veins not distinct to the edge, veinlets forming copious areoles, free venules few ; sori immersed in a single row nearer the costa than the margin, with corresponding pustules on the upper side. Sw. ;—*Hook. Sp. Fil.* v. p. 98 ;—*Syn. Fil.* p. 368 ;—*Polyp. diversifolium. R. Br.*

The specimen figured is from Malacca.

Hab. Malacca and Malay Islands, Tropical Australia, Tropical Pacific Islands, Norfolk Island.

PLATE No. CCCXIV.



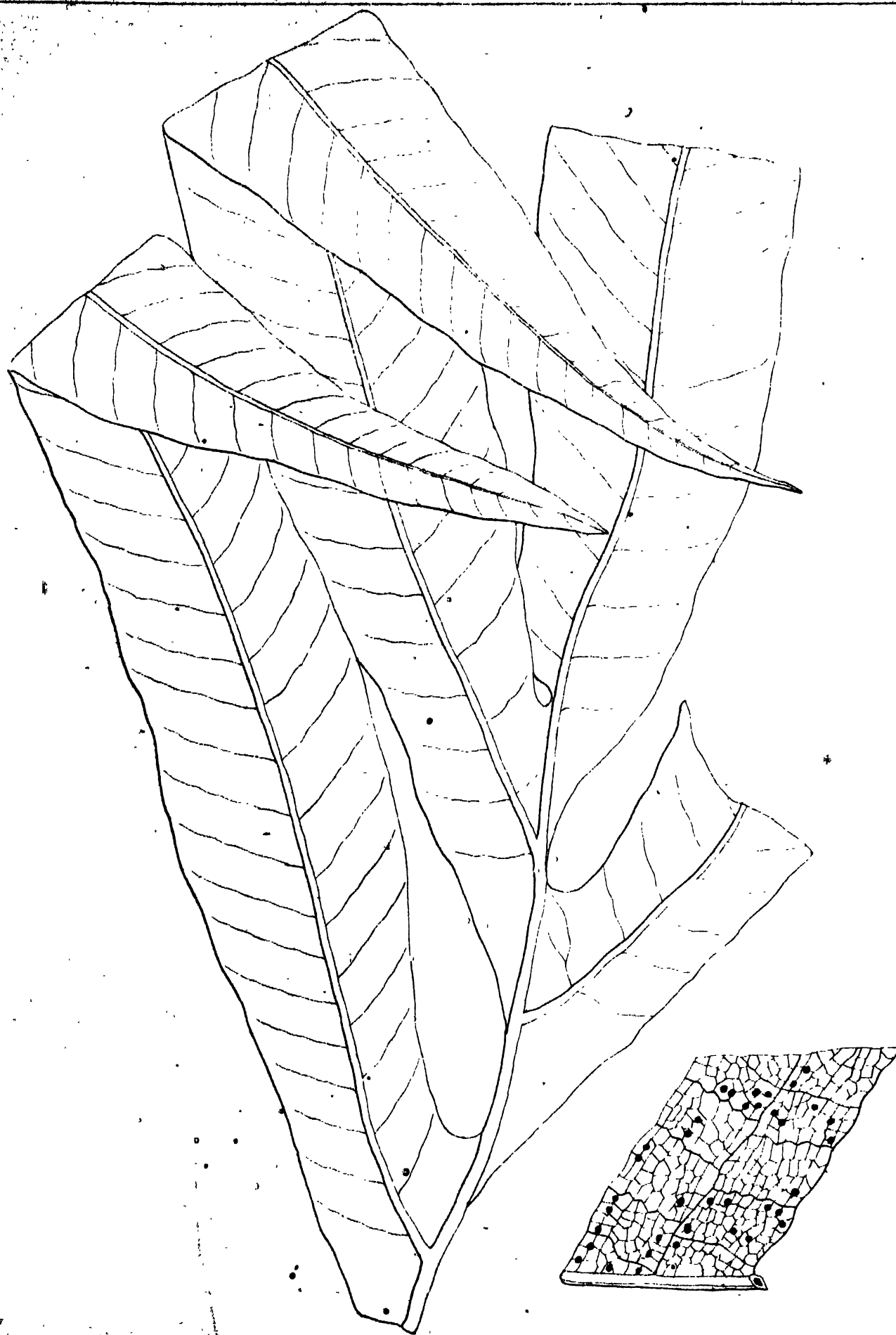
Drymaria rigidula (Sw.)

DRYNARIA:

DRYNARIA LINNÆI. (Bory.) Rhizome stout, the scales 1-2 lin: long broadly ovate, with a short acumen from a peltate base; fronds dimorphous, the barren ones sessile, brown, rigid, bluntly lobed; the fertile ones long-stalked, 2-3 feet long, 6-12 inches broad, cut down nearly to the rachis into entire erecto-patent lanceolate lobes; texture rigid, both sides naked; main veins distinct to the edge, with copious irregular areolæ between them, with copious small sori.—*P. sparsisorum*. *Desv*;—*Hook. Syn. Fil. p.* 368.

Hab. Ceylon, Malacca, Tropical Australia, Solomon Isles. Differs from *D. quercifolia* by its scattered sori. *

PLATE No. CCCXV.



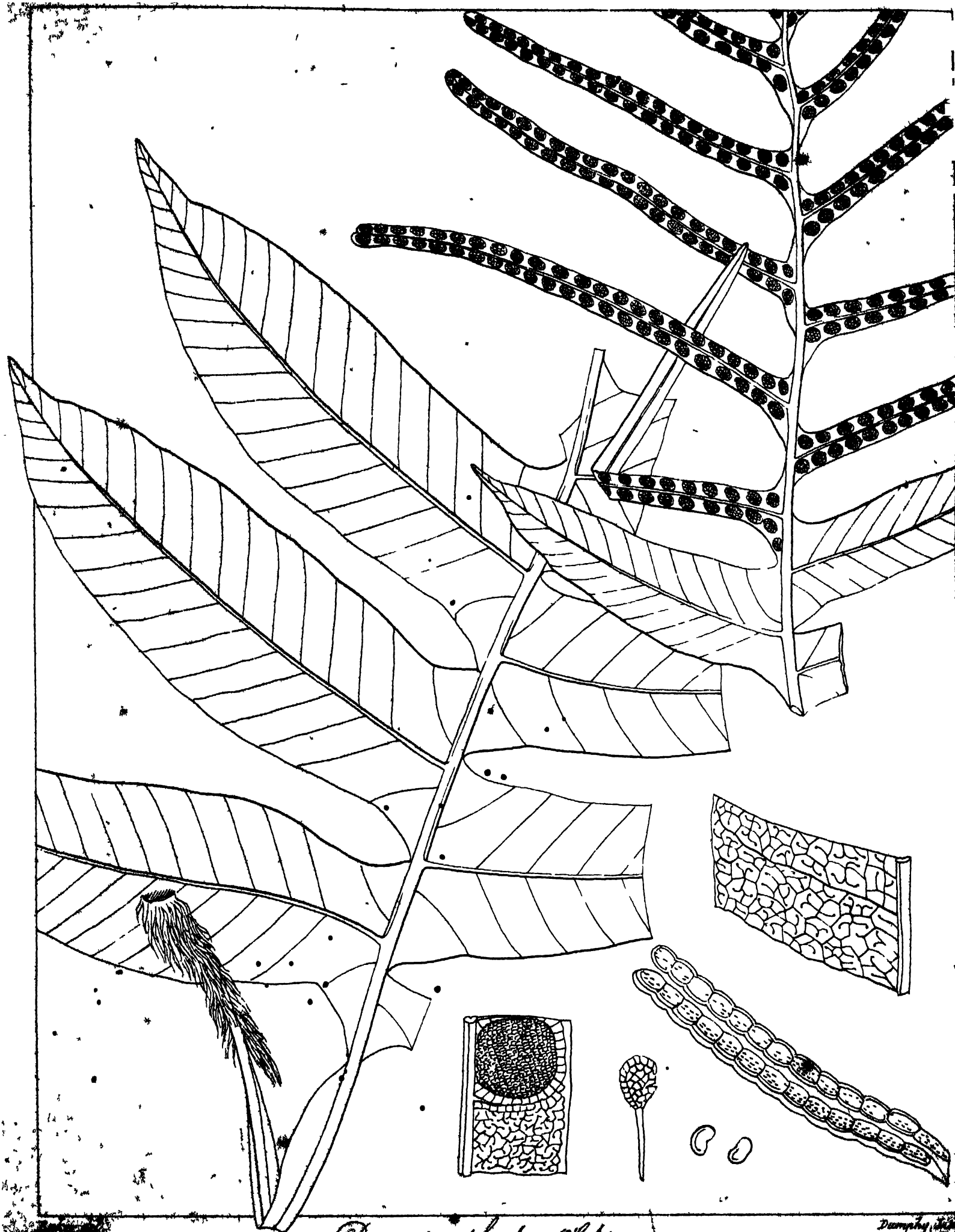
Drynaria Linnaei (K. Presl.)

DRYNARIA.

DRYNARIA SPLENDENS. (Hook.) *Rhizome* woody, the scales grey, fibrillose, adpressed; *fronds* subsessile, 2-3 feet long, 1 ft. or more broad, the lower part barren, cut down nearly or quite to the rachis into erecto-patent entire acute lobes 4-8 inches long, 1-2 inches broad, the upper fertile pinnae distant, ligulate, 4-8 inches long $\frac{1}{4}$ - $\frac{1}{2}$ inch broad; main *veins* distinct, with distinct transverse veinlets and copious intermediate ones and free veinlets; *sori* oblong or subquadrangular, filling up the whole of the fertile pinnae except the midrib. *Hook, Sp. Fil.* v. 96; —*Syn. Fil.* 367; —*Dryostachyum. J. Sm.*; —*Moore—vary* β . *pilosum. Dryost. pilosum. J. Sm.*

Hab. Singapore, Philippines.

PLATE No. CCCXVI.



Onoclea sensibilis L.

Dumort.

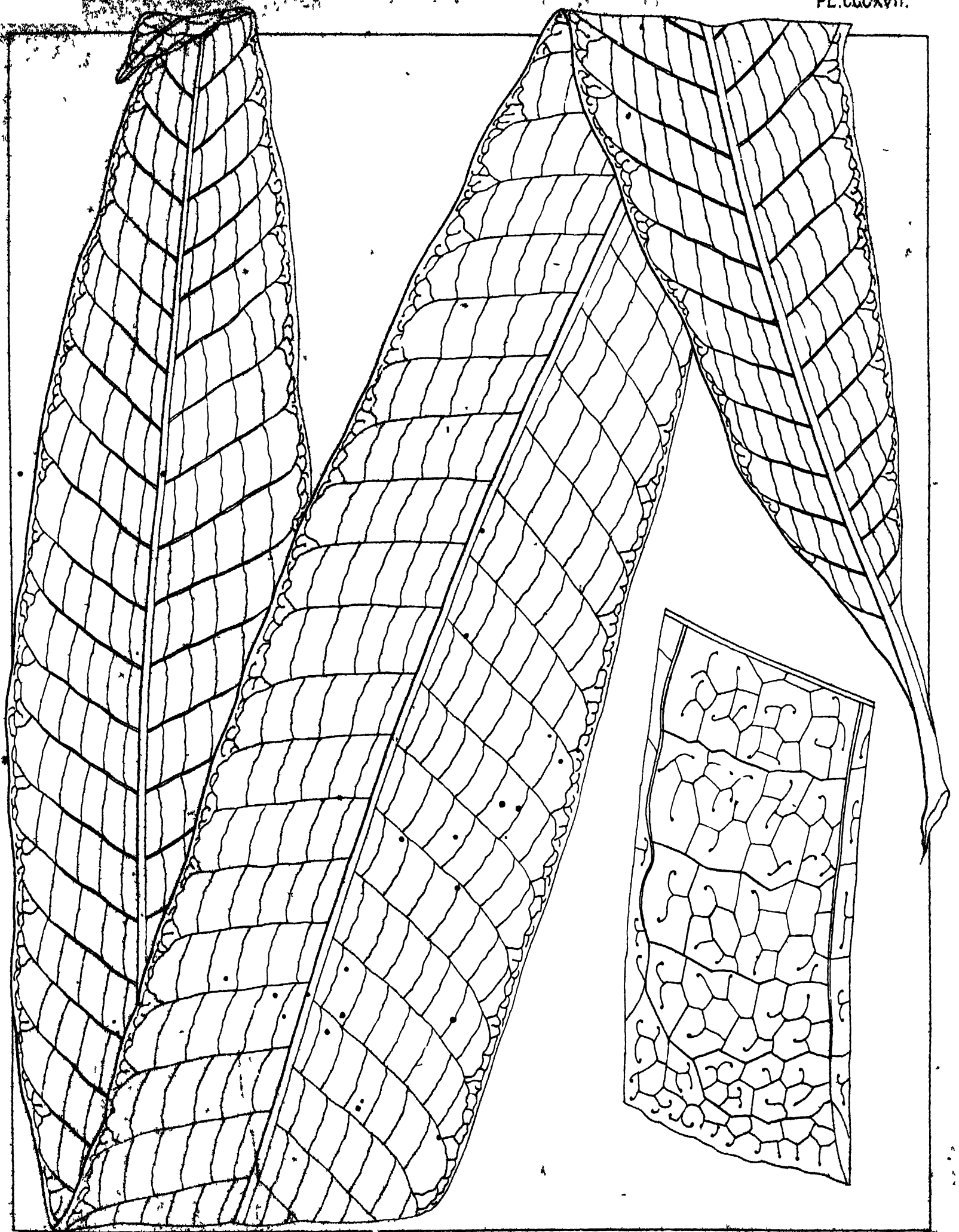
PLEOPELTIS.

PLEOPELTIS MUSÆFOLIA. (Bl.) *Rhizome* woody, the scales ovate, dull-brown ; *fronds* 1-3 feet long, 3-4 inches broad, the point acute or bluntish, the lower part broadly winged to the very base, *texture* coriaceous, both *sides* naked, main *veins* very distinct, connected by distinct arched veinlets, with copious fine areolæ with free veinlets in the interspaces ; *sori* small, very numerous, sometimes converging nearly the whole surface. *Hook. Sp. Fil.* v. p. 68 ;—*Syn. Fil.* 360. Nearly allied to *Pleop. irioides*, but of a different texture, and the veins more distinct.

The specimen figured is from Malacca.

Hab. Malay Peninsula and Islands.

PLATE No. CCCXVII.



Phoradendron

musculina (Pl.)

Dumpling, Lill.

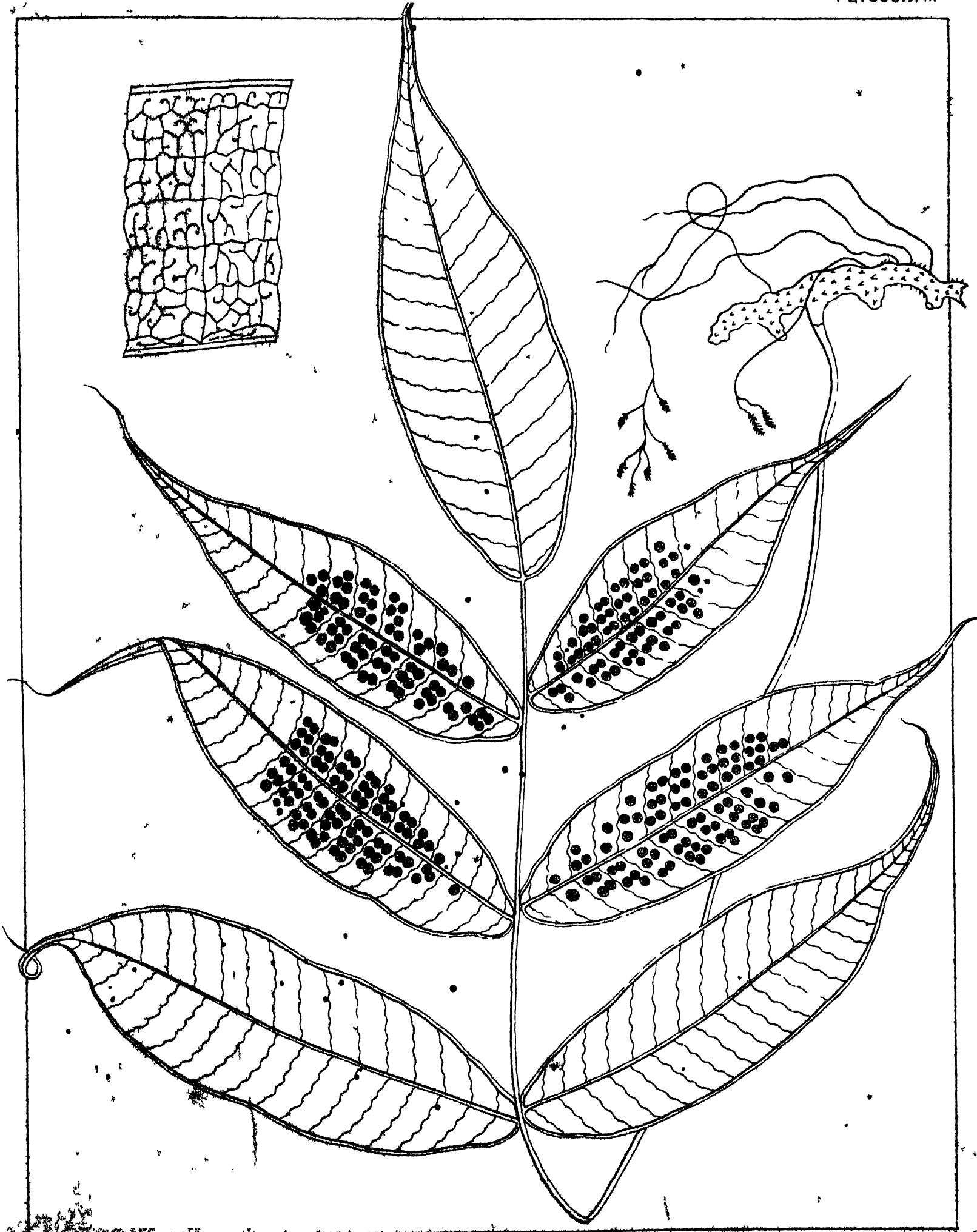
PLEOPELTIS.

PLEOPELTIS HIMALAYENSIS (Hook.) Caudex creeping, clothed with bright ferruginous hair-like scales, stipites a span to 1 foot and more long, fronds 1-1½ foot long, thin membranaceous, and sometimes pubescent or even subtomentose, glabrous subcoriaceous in age, pinnated, pinnæ almost invariably opposite sessile in distant pairs 5-8-9 inches long, by 1½-2 inches broad from an obtuse base elliptical oblong finely and long-caudately acuminate entire, but with a very distinct membranous margin, costules manifest connected by transverse veins forming areoles, of which one or all are soriiferous; these areoles are filled up with a network of lesser areoles which have free included veinlets, sori often large 1-2 in the primary areoles, hence they are 1-2 serial between each pair of costules, and 3-4 serial in a direction parallel with the costa. *Hook. Sp. Fil.* v. 91;—*Polypodium venustum*. *Wall. Cat.* 805, *not of Desv.*

The specimen figured is from the Khasya hills (Dr. Jerdon). It is nearly allied to the broader varieties of *Pleopeltis Lehmanni*, but the veins are more distinct, and there is a distinct scarious edge, and the pinnæ are fewer in number and broader. I formerly united it with *P. capitellata* (Wall), the *P. juglandifolia* Don., Pl. XII of this work, but that species appears to have invariably only one row of sori between the costa and margin. Since figuring the *P. Lehmanni* I have received copious specimens from the Himalayas with much broader pinnæ unequally cordate at the base. *Pleopeltis Moulmeinensis*, Pl. CCV, is like *Lehmanni* in habit, but with the sori of *capitellata*. A careful examination of living specimens of *P. capitellata*, *Lehmanni*, *Himalayensis*, and *Moulmeinensis* will perhaps prove that they are all varieties of one protean species.

Hab Nepal, Khasya, Bhootan (7,500 ft.), Sikkim.

PLATE No. CCCXVIII.

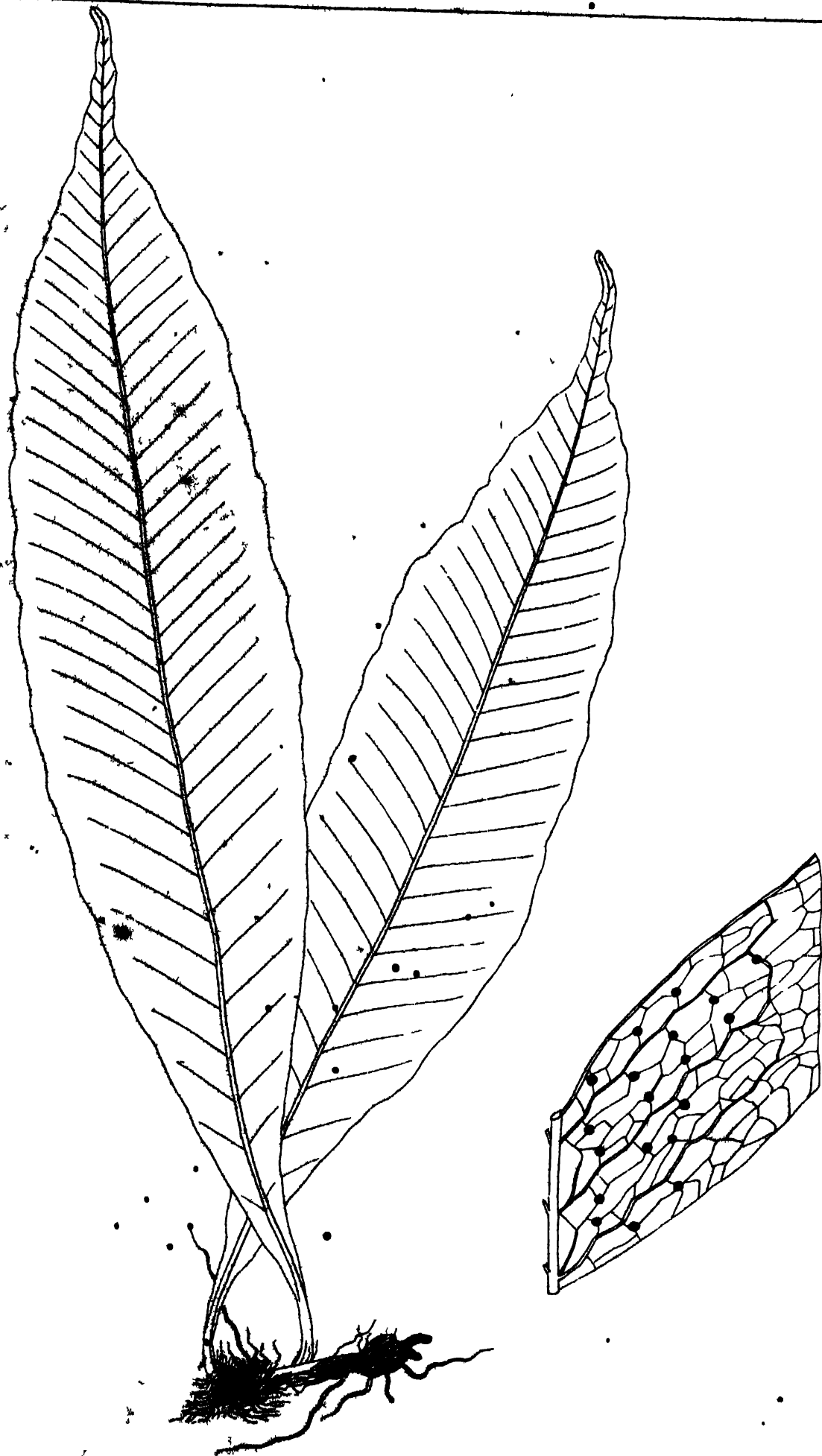


PLEOPELTIS.

PLEOPELTIS HETEROCARPA. Blume (not Mett.) *Rhizome* firm, wide-creeping, the scales squarrose, linear, dull-brown, *stipe* 3-4 inches long, firm, erect; *frond* 1-2 feet long, 1½-3 inches broad, entire, narrowed to both ends very gradually, *texture* firm, both *sides* naked; main *veins* distinct to the edge; areolae copious, with free veinlets; *sorti* in rows of 4 to 6 near the main veins. *Hook. Syn. Fil. p.* 360,—*Polypodium Zollingerianum* Kze.—like *Pleopeltis membranacea* in habit, but firmer in texture. *vary β.* *P. Zippellii*, *Blume*. *sori* smaller, scattered irregularly. *Hook. Sp. Fil. v.* 72.

Hab N. India, Ceylon, Java, Borneo, Philippines.

PLATE No. CCCXIX.



Alseodaphne heterocarpa (Blume)

Dromph, Deth.

NIPHOBOLUS.

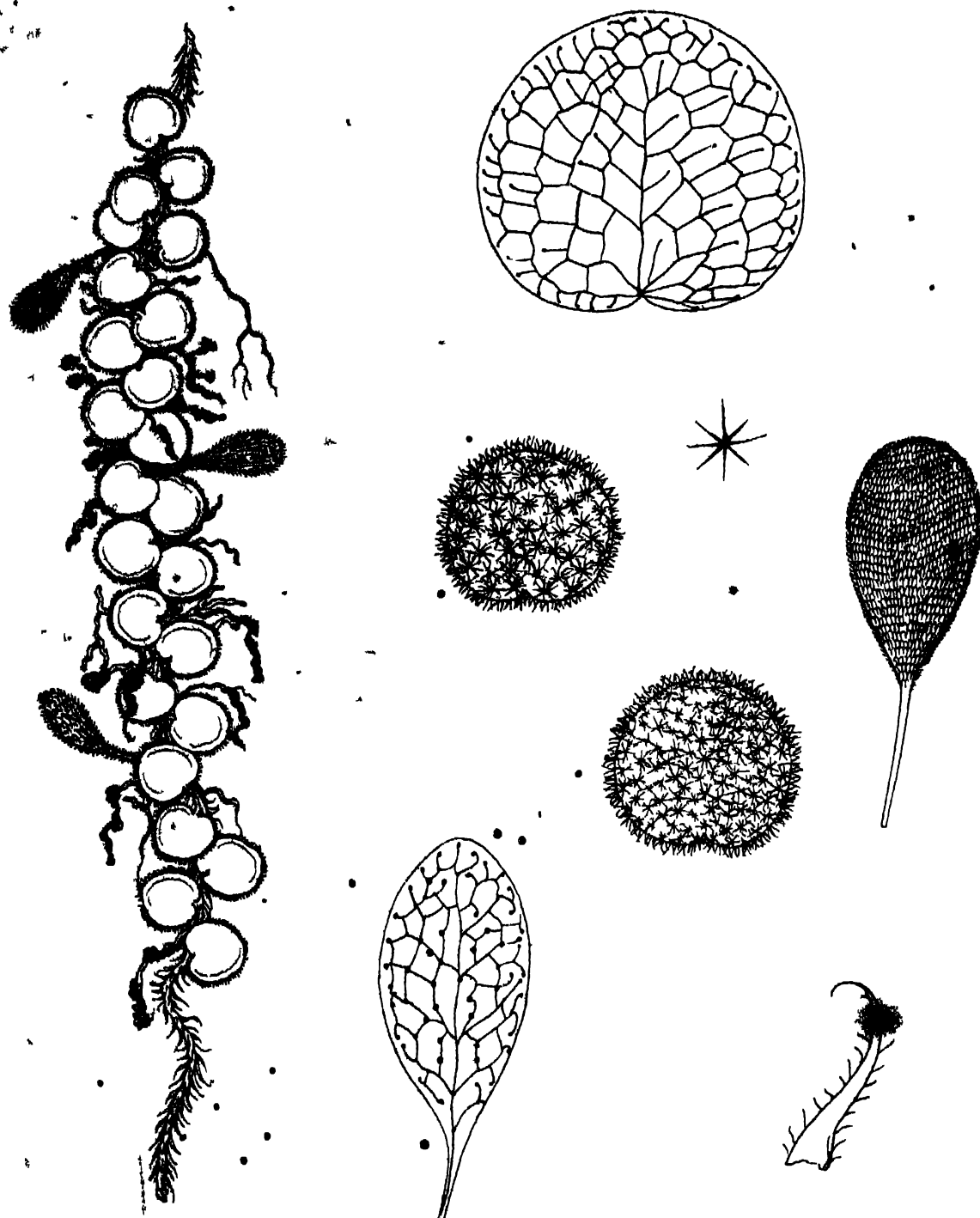
NIPHOBOLUS NUMMULARIAEFOLIUS. (Mett.) *Rhizome* slender, wide-creeping, filiform, clothed with bright ferruginous fibrillose scales ; *stipe* erect, $\frac{1}{4}$ -1 inch long, often scaly ; *fronds* dimorphous, the barren ones roundish or elliptical, the fertile ones longer and narrower, $1\frac{1}{2}$ -2 inches long, $\frac{1}{4}$ - $\frac{1}{2}$ inch broad, *texture* subcoriaceous, upper *surface* naked, lower densely coated with loose ferruginous woolly tomentum ; main *veins* distinct, connected by 4 to 6 arched areolæ ; *sori* close, scattered, sometimes covering the whole surface. *Hook. Sp. Fil.* v. 54 ;—*Syn. Fil.* 351 ;—*Galeoglossa* Presl.

Plate 186 of the Ferns of S. India, figured as this species, is I believe only a form of *Drymoglossum piloselloides* ; if so, this fern must be excluded from the S. Indian Flora. I am far from satisfied that the fern here figured is more than a variety of the same *Drymoglossum*, and its venation hardly entitles it to be placed in *Niphobolus*. The main veins are scarcely distinct, or at least not always so.

The specimen figured is from Assam.

Hab. N. India, Philippines, Malacca.

PLATE No. CCCXX.



Niphotolus nummularifolius (Mott.)

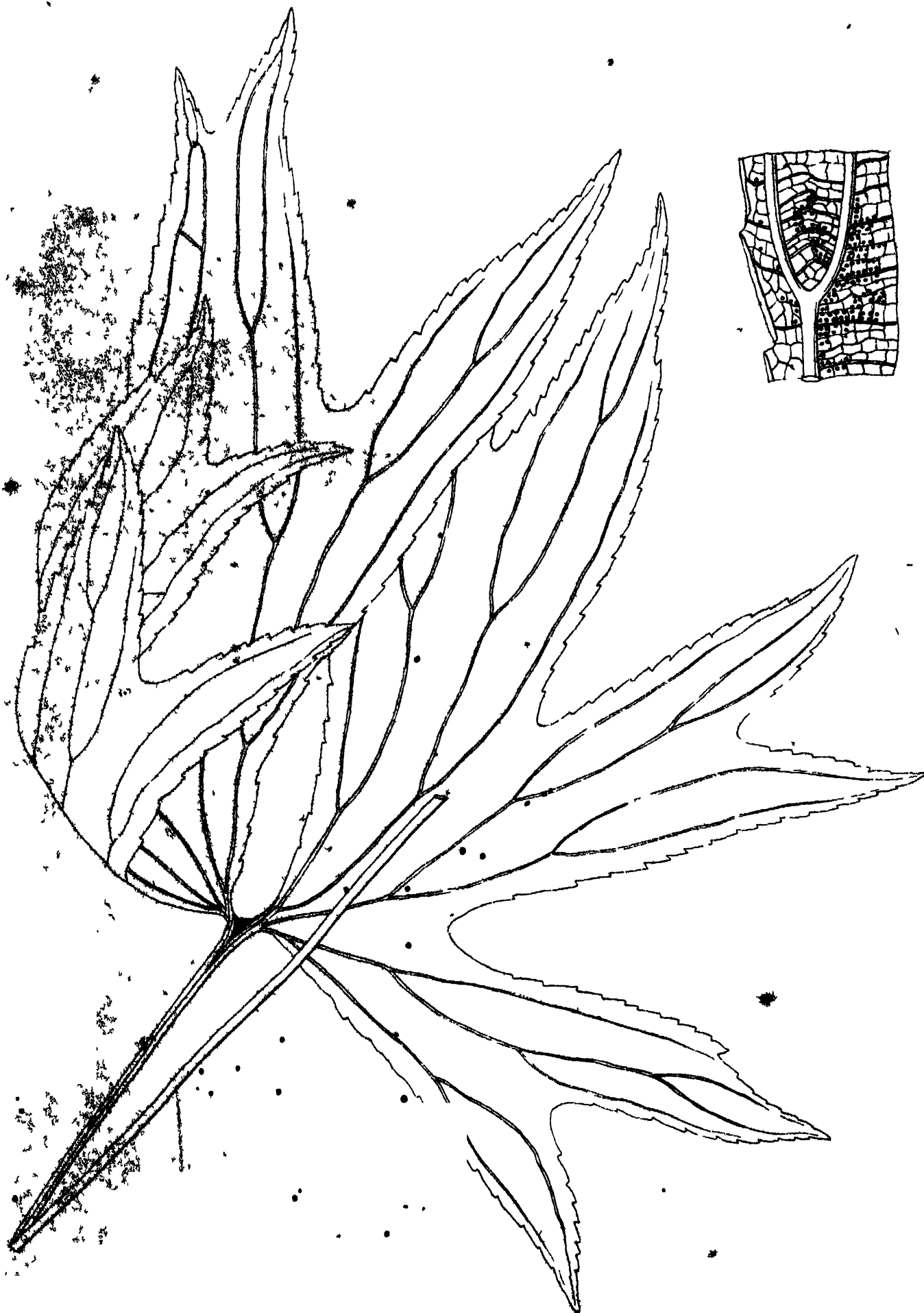
DIPTERIS.

DIPTERIS HORSFIELDII. (Br.) *Stipe* strong, 3-5 feet long ; *frond* 1-3 feet long, and much broader, the main lobes, reaching three quarters of the way down, the edges sharply toothed, *texture* subcoriaceous, upper *surface* dark-green, lower very glaucous, main *veins* very prominent, dichotomously forked ; *areolæ* copious ; *sori* very minute, scattered irregularly, especially plentiful near the main veins, confluent, not gummy. Polyp. *Dipteris*, *Bl.* ;—*Syn. F.* p. 362 ;—Polyp. *Horsfieldii*, *B. Br. Hook Sp. Fil.* v. p. 99 ;—Polyp. *conjugatum*, *Kaulf* (not Lam.)

The specimen figured is from Malacca.

Hab Malacca and Polynesian Islands, as far as Fiji.

PLATE No. CCCXXI.



Quercus bicolor

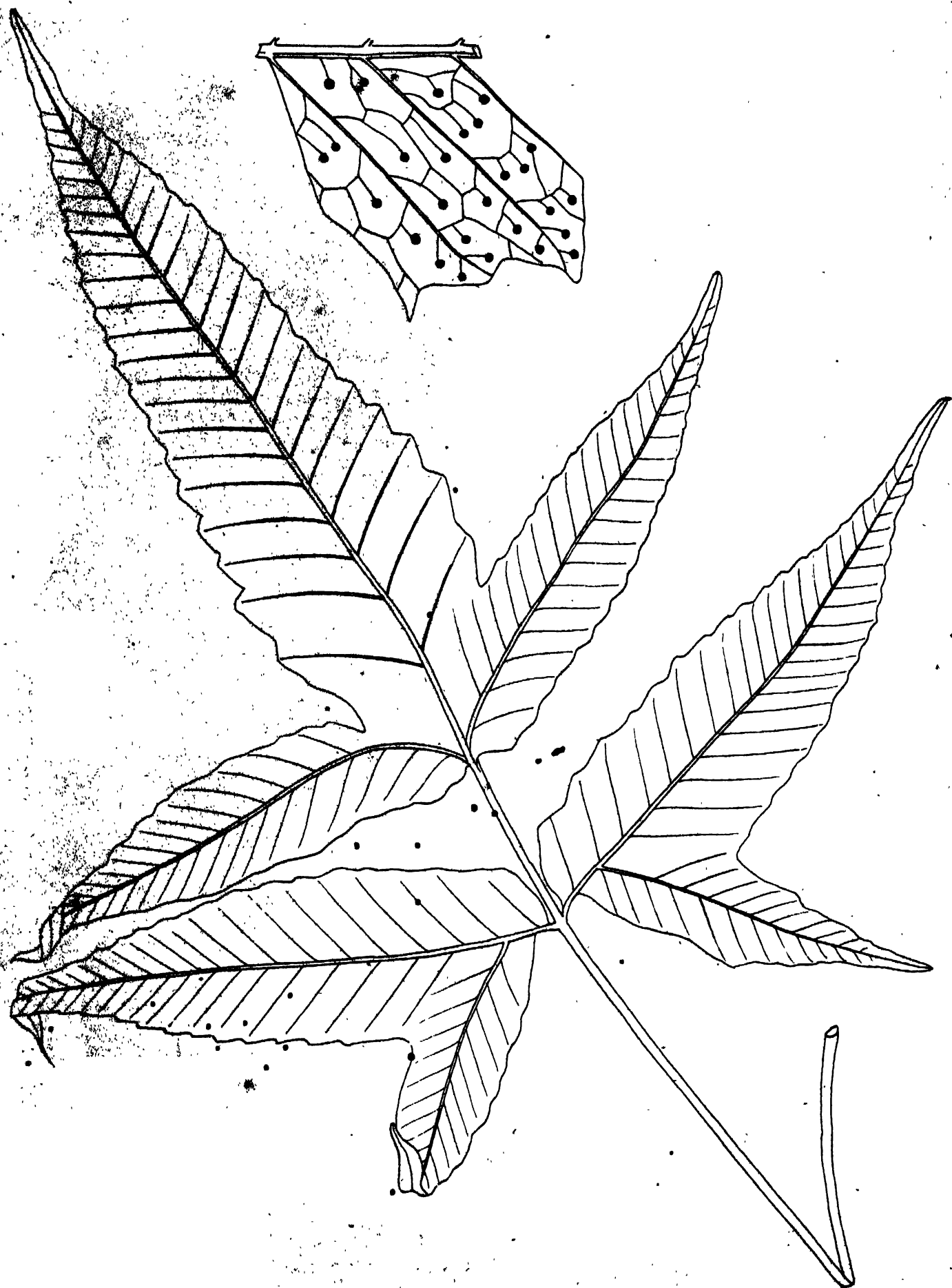
DICTYOPTERIS.

DICTYOPTERIS BARBERI (Hook) *Stipe* tufted, 6-12 inches long, slightly scaly at the base; *fronds* palmately 5-lobed or more usually pinnate with a large terminal segment and 1-4 pairs of pinnæ, the upper ones oblong-lanceolate, 4-6 inches long, 1 inch broad, nearly entire, the lowest pair with a deep lanceolate lobe at the base on the lower side, *texture* subcoriaceous, both *sides* naked, areolæ rather large and regular, with copious free veinlets, *sori* copious, principally in two rows near the main veins *Hook. Sp. v. p. 100*,—*Syn. Fil. 317*

The specimen figured is from Malacca

Hab. Malacca and Malay Isles

PLATE No. CCXXII.



Alnus Barbata L.

W. & A. Smith

POLYPODIUM.

POLYPODIUM SUBEVENOSUM. (Baker.) *Stipe* tufted, very short, black, wiry; *fronds* 3-4 inches long, $\frac{1}{8}$ inch broad, ligulate, the point bluntish, the lower part narrowed very gradually, the edge slightly repand, *texture* subcoriaceous, *colour* bright-green, the *rachis* black, slightly furfuraceous below; *veins* simple, very short and indistinct; *sori* round, tending slightly towards oblong, in a long row on each side close to the midrib. *Hook. Syn. Fil. p. 320.*

Hab. Penang.

PLATE No. CCCXXIII.



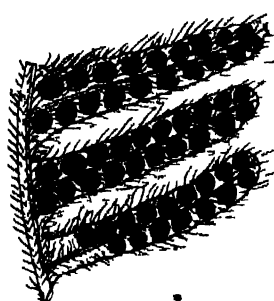
Polypodium subvenosum (R. Baker)

POLYPODIUM.

POLYPODIUM FUSCATUM. (Bl.) *Stipe* tufted, 1-3 inches long, densely clothed with soft spreading hairs ; *fronds* 3-6 inches long, $\frac{1}{2}$ -1 inch broad, cut down nearly or quite to the rachis throughout into close entire obtuse *pinnas*, $\frac{1}{2}$ lin. broad, the lower ones shorter and broader, *texture* subcoriaceous, *rachis* and both sides thinly clothed with soft hairs ; *veins* obscure, simple, *sori* forming a close row on each side the midrib, at last filling nearly the whole surface. *Hook. Syn. Fil.* p. 881.

Hab. Ceylon, Java.

PLATE No. CCCXXIV.



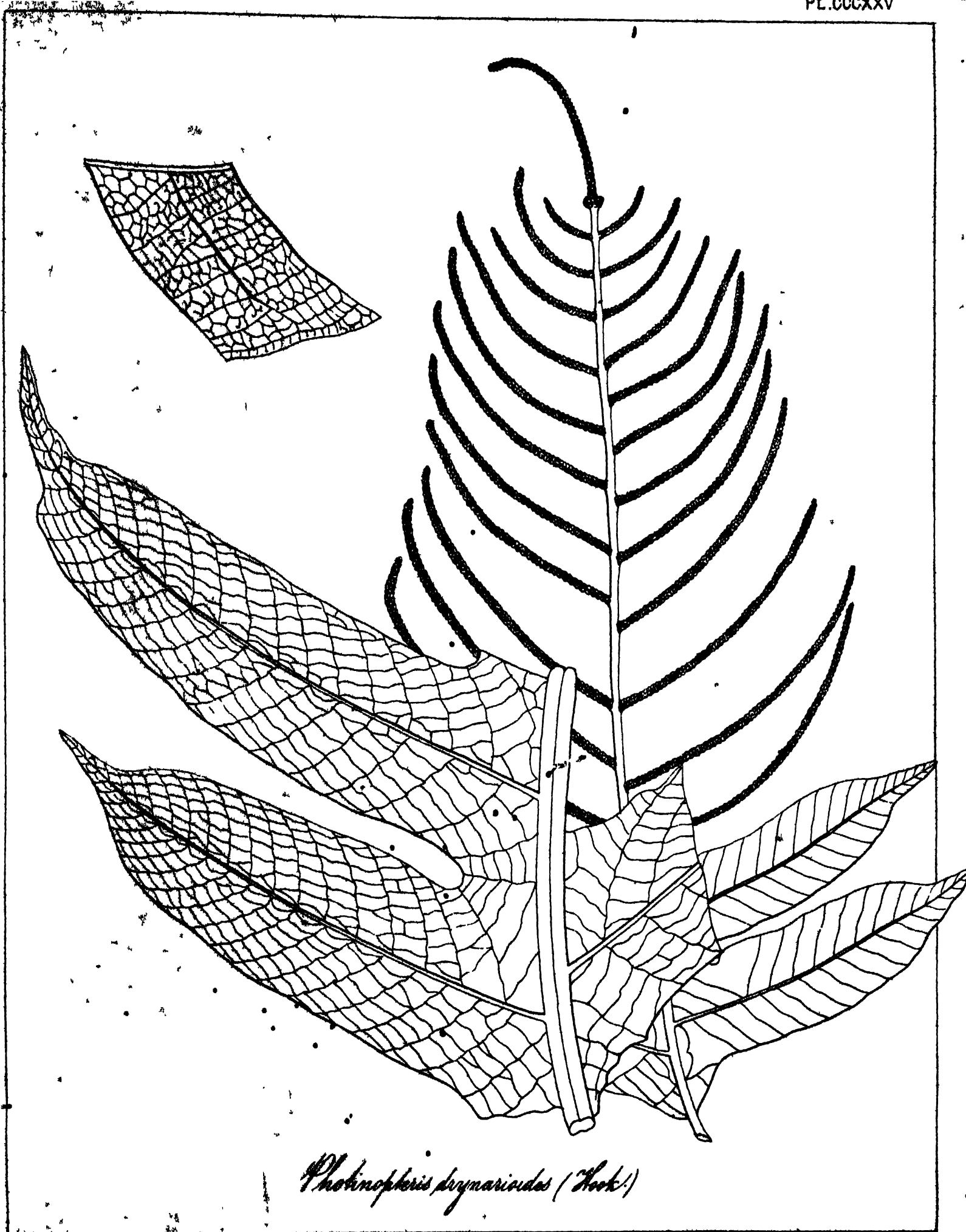
Polypodium fuscatum (Rume)

PHOTINOPTERIS.

PHOTINOPTERIS DRYNARIOIDES. (Hook.) *Fronds* subsessile, several feet long, 1 foot or more broad, the upper part with numerous distant Lomarioid *pinnæ*, sometimes 1 foot long, 1 lin. broad, below this pinnatifid, with numerous close entire lanceolate acuminate lobes 4-6 inches long, $1\frac{1}{4}$ - $1\frac{1}{2}$ inches broad, which reach down nearly to the rachis, the lower ones passing down gradually into a mere undulated wing to the rachis, which is continued to its very base, *texture* very coriaceous, *main veins* raised, with transverse veinlets, and between them copious small areolæ with free veinlets. *Hook. Syn. Fil. p. 426.*

Hab. Penang, Solomon Isles.

PLATE No. CCCXXV.



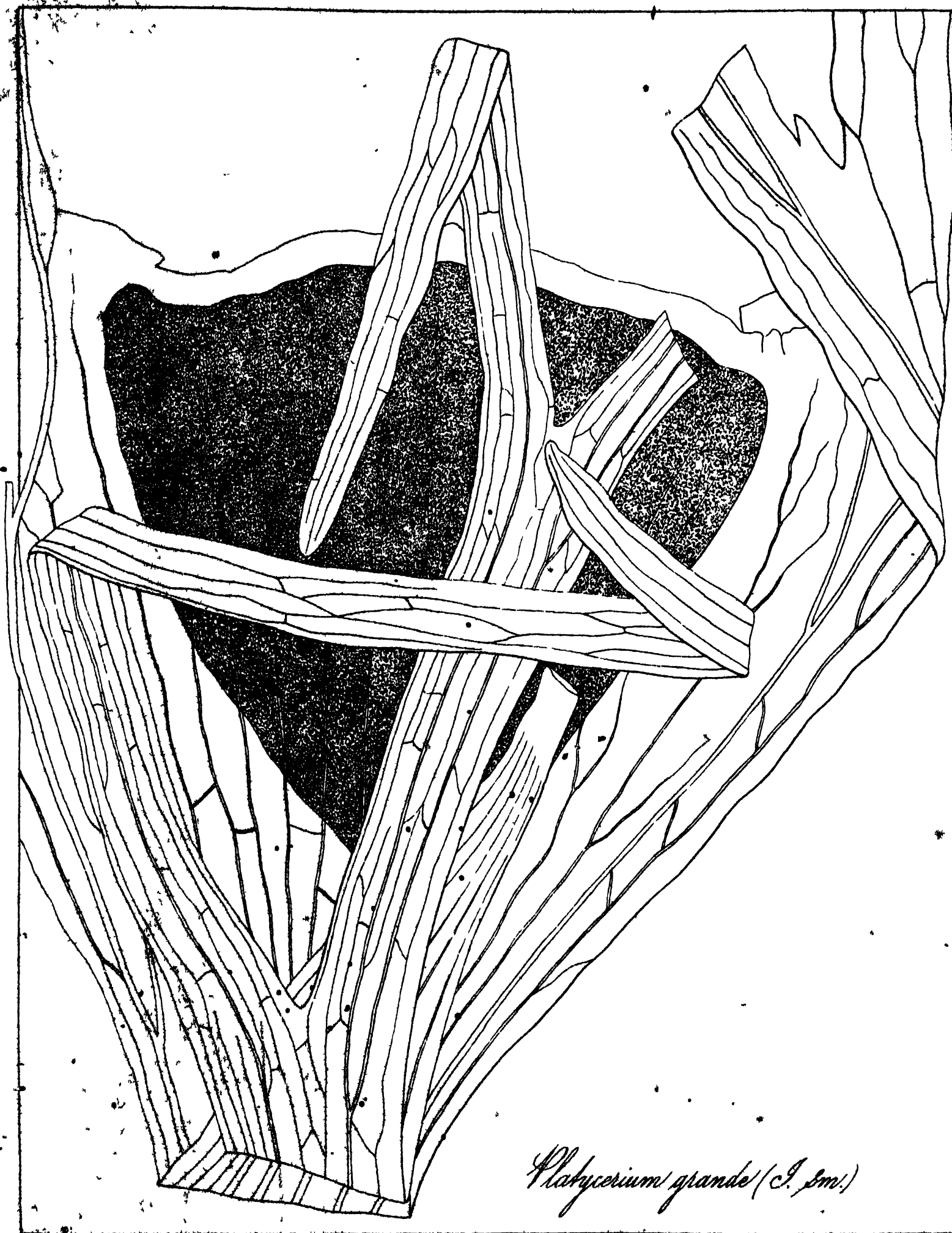
Photinopteris drynarioides (Hook.)

PLATYCERIUM.

PLATYCERIUM GRANDE. (J. Sm.) Barren *fronds* very large, suborbicular, convex, or the upper ones erect, deeply lacinated with spreading or inflexed divisions ; fertile fronds 4-6 feet long, pendent, in pairs, the disk broad-ovate, with the *sorus* against the upper edge, occupying the disk only, with an elongated dichotomously forked division beyond it at each corner ; both *surfaces* green and smooth. *Hock. Syn. Fil. p. 425 ;—Sp. Fil. v. 284 ;—Fil. Ex. t. 86.*

Hab. Singapore, Philippines, N. Australia.

PLATE No. CCCXXVI.



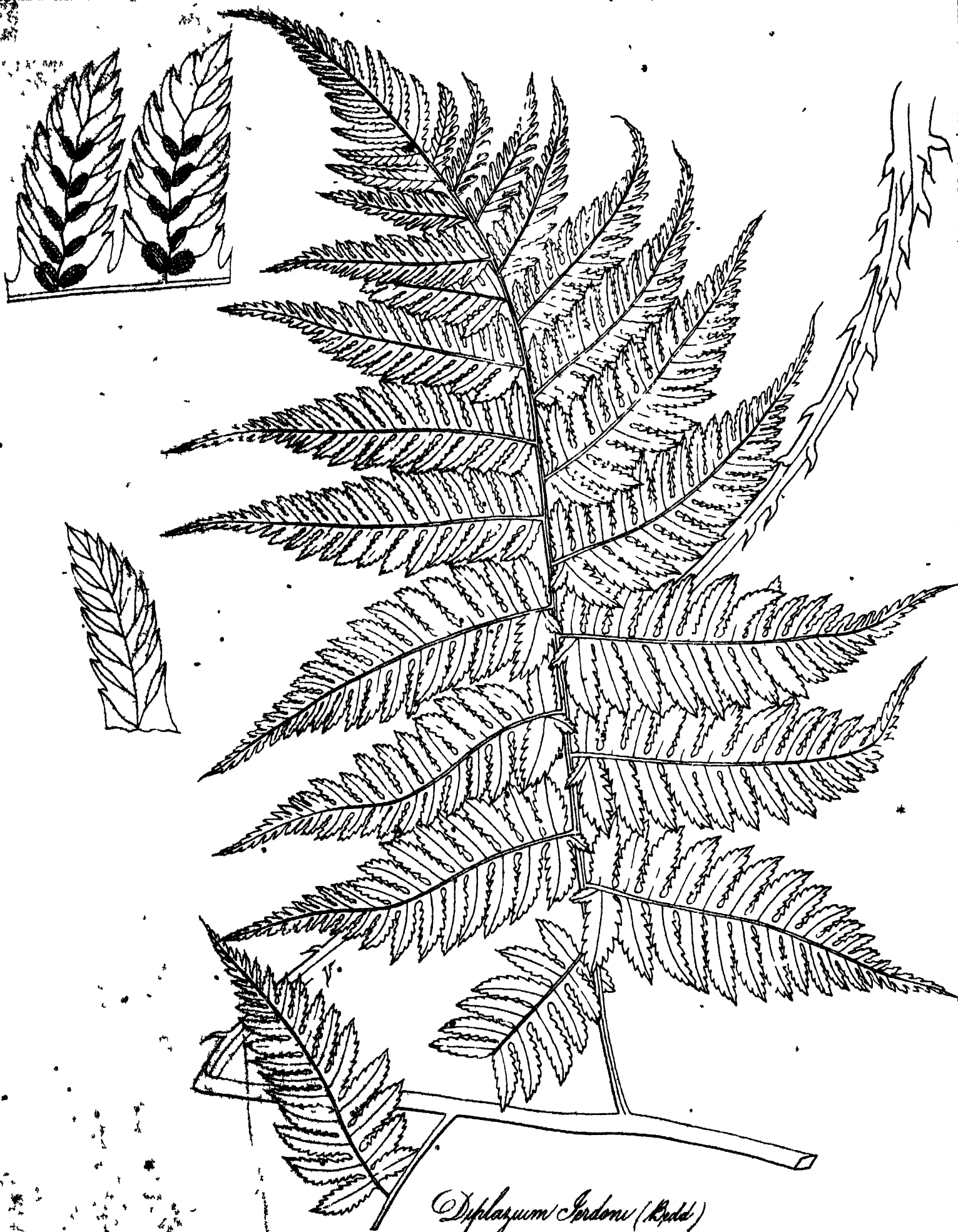
Platycerium grande (I. Sm.)

DIPLAZIUM.

DIPLAZIUM JERDONI. (Bedd.) Caudex? *stipes* up to 2 feet long, firm angled, glabrous, but furnished with linear scales especially near the base; *fronds* ample, 2 feet and more long, 16-20 inches broad ovate tripinnate, *pinnae* alternate, the lower pairs rather smaller than the next pair, and the upper ones gradually diminishing in size; secondary *pinnae* up to 8 inches long by a little more than 1 inch broad, ending in a long serrated acumination and deeply cut down nearly to the rachis into oblong sharply-toothed slightly falcate acuminate pinnules, which are about $\frac{1}{2}$ an inch long and $\frac{1}{4}$ inch broad and sessile from a broad base, and glabrous on both sides; *teeth* or segments 6-8 on each side, falcate acute and cut down $\frac{1}{3}$ or $\frac{1}{2}$ of the way to the costule; *veins* prominent, pinnate or forked in each segment; *sori* oblong 8-12 to each tertiary pinnule rising from close to the costule, and not nearly reaching to the margin; the lower basal tooth or segment of each of the lower basal tertiary pinnules is larger than the rest, and is furnished with 2, 3 sori.

Himalayas (Dr. Jerdon.)

PLATE No. CCCXXVII.



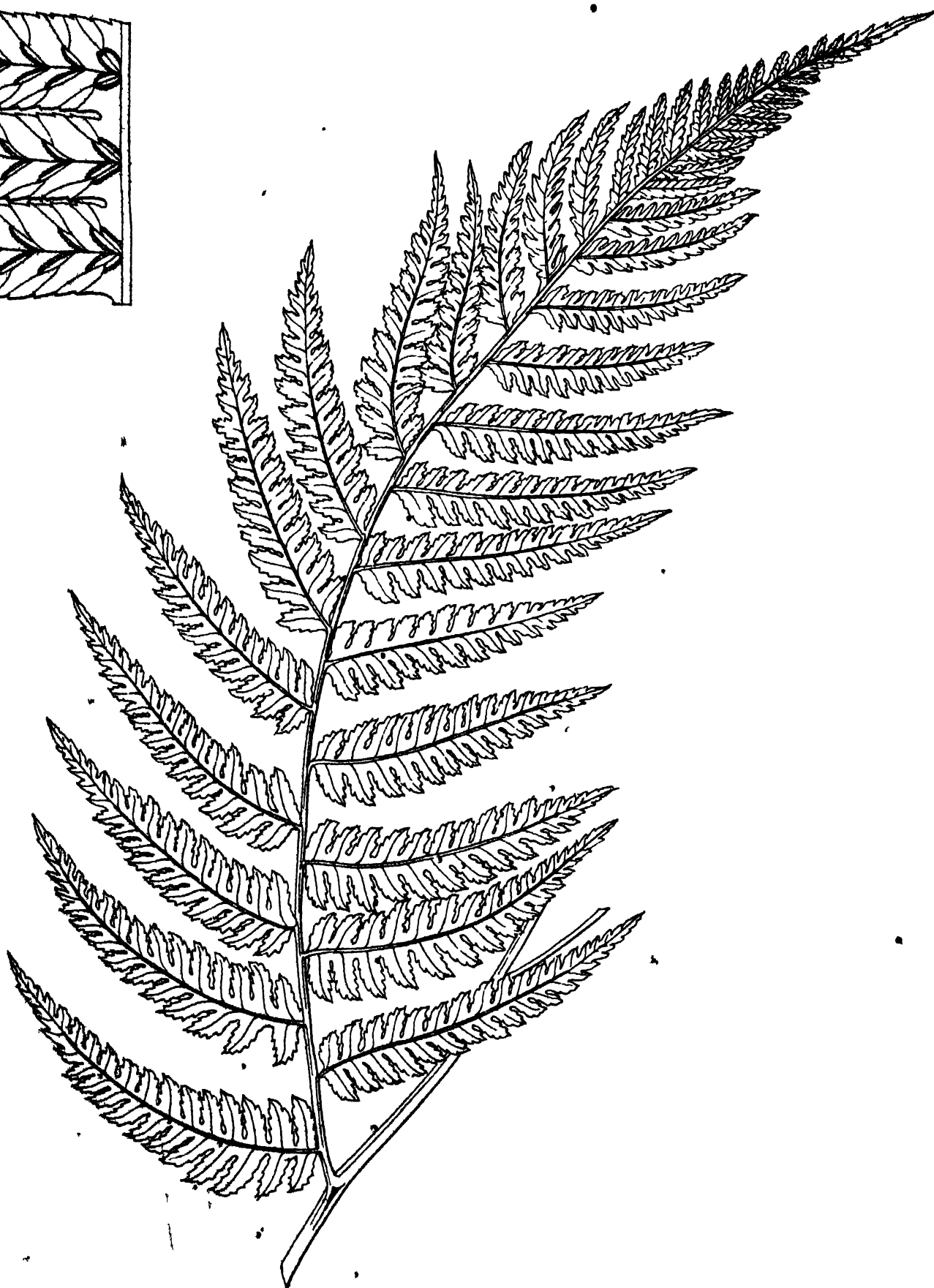
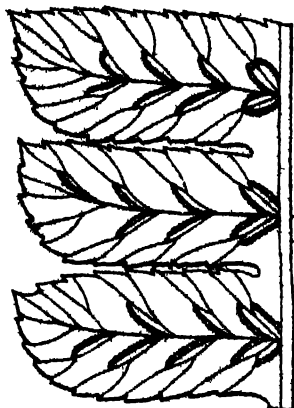
Diplazium Jordanii (Ridd.)

DIPLAZIUM.

DIPLAZIUM GRIFFITHII. (Baker.) *Stipe* 1 foot long, naked, firm, erect ; *fronds* 12-18 inches long, nearly as broad ; lower *pinnæ* 9-12 inches long, 6 inches broad, on stalks 1 inch long ; pinnules numerous, the longest 3 inches long, $\frac{3}{4}$ inch broad, cut down nearly to the rachis below ; *lobes* erecto-patent, $\frac{1}{2}$ inch deep, $\frac{1}{2}$ inch broad, deeply toothed, not contiguous ; *rachis* smooth, flexuose, substramineous, texture subcoriaceous, both surfaces naked ; *veins* about 6 on a side in each lobe, with an oblong *sorus* on each, which is less than 1 lin. long, touches the *costa*, and scarcely reaches half way to the edge. *Syn. Fil.* p. 239.

Hab. Assam (Griffith), figured from a specimen in the Kew Herbarium.

PLATE No. CCCXXVIII.



Diplazium Griffithii (Hook.)

ASPLENIEÆ.

C Indusia connate in pairs back to back.

* * * *Veins reticulated.*

ANISOGONIUM. Presl.

(*Pteriglyphis*. *Fee*. ;—*Ochlogramma*. *Presl.* ;—*Diplazii*. *Sp. Auct.* ;—*Asplenii*. *Sp. Auct.* ;—*Callipteritidis*. *Sp. Auct.* ;—*Oxygonium*. *Presl.*)

GEN. CHAR. : *Sori* indusiate, linear elongate, usually double and together with the *receptacles* as in *Diplazium* ; *Indusium* narrow plane membranaceous diplazioid ; *veins* forked (rarely simple) from a central costa ; *venules* parallel below, soriferous on the elongated parallel portion, reticulato-anastomosing in one or two series of short areoles near the margin ; the marginal veinlets free.

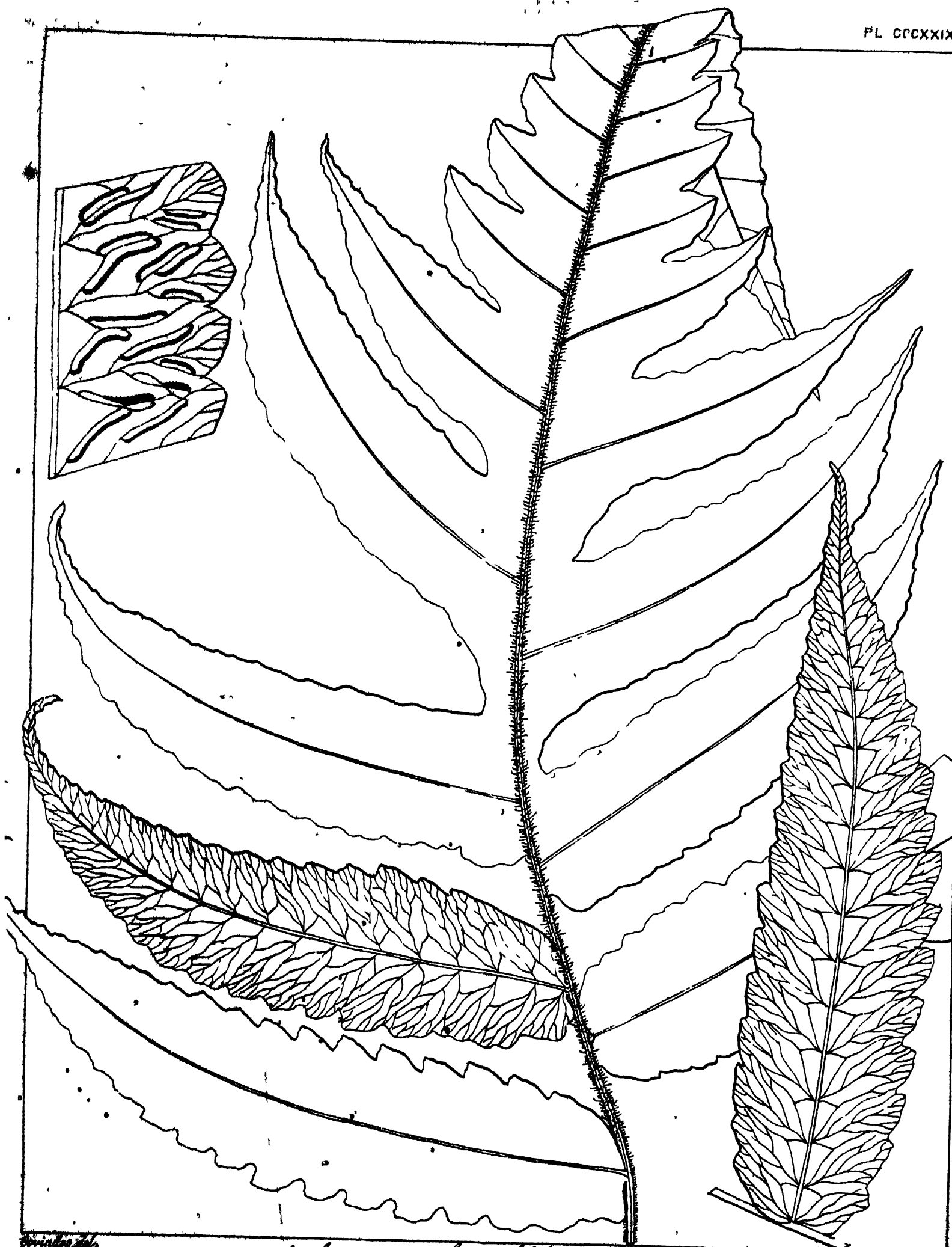
Fronds coriaceous simple or pinnate ; rhizome creeping. (Moore).

ANISOGONIUM HETEROPHLEBIUM. (Mett. MSS.) *Stipe* 1 ft. long, grey, scaly throughout ; *fronds* 12-18 inches long, 8-9 inches broad, with 6-8 opposite pairs of *pinnæ* below the pinnatifid apex ; the lowest 2 inches or more apart, 3-4 inches long, 1-1½ inches broad, the edge undulated, the point acute, the base cordate on both sides, *texture* thinly herbaceous, colour dark-green ; *rachis* villose and fibrillose throughout ; both *surfaces* naked ; *veins* pinnate, the groups joining one-third of the way from the midrib to the edge, and the veins of the same and different groups anastomosing ; *sori* not reaching the edge, copiously diplazioid. *Hook. Syn. Fil.* p. 243.

The specimen figured is from the Himalayas (Dr. Jerdon).

Hab. Himalayas, Mishmee, Assam.

PLATE No. CCCXXIX.



Anisogonium heterophlebium (Mitt.)

Drumsey, 1888

ANISOGONIUM.

ANISOGONIUM LINEOLATUM. (Mett.) *Stipe* 6-9 inches long, firm, erect, grey, scaly below ; *fronds* occasionally simple, usually with a terminal *pinnæ* and 3-6 pairs of lateral ones, which are 6-12 inches long, 2 inches or more broad, entire, often suddenly acuminate, *texture* coriaceous ; *rachis* naked ; *veins* 4-8 to a cluster, uniting slightly towards the edge. *Hook. Syn. Fil.* p. 243 ;—*Asplenium elegans*. Mett. *Hook. Sp. Fil.* iii. p. 268 ;—*l.c. Pl. t.* 939.

Hab. Malacca, Malay Isles, Philippines.

PLATE No. CCCXXX.



Anisogonium lineolatum (Mett.)

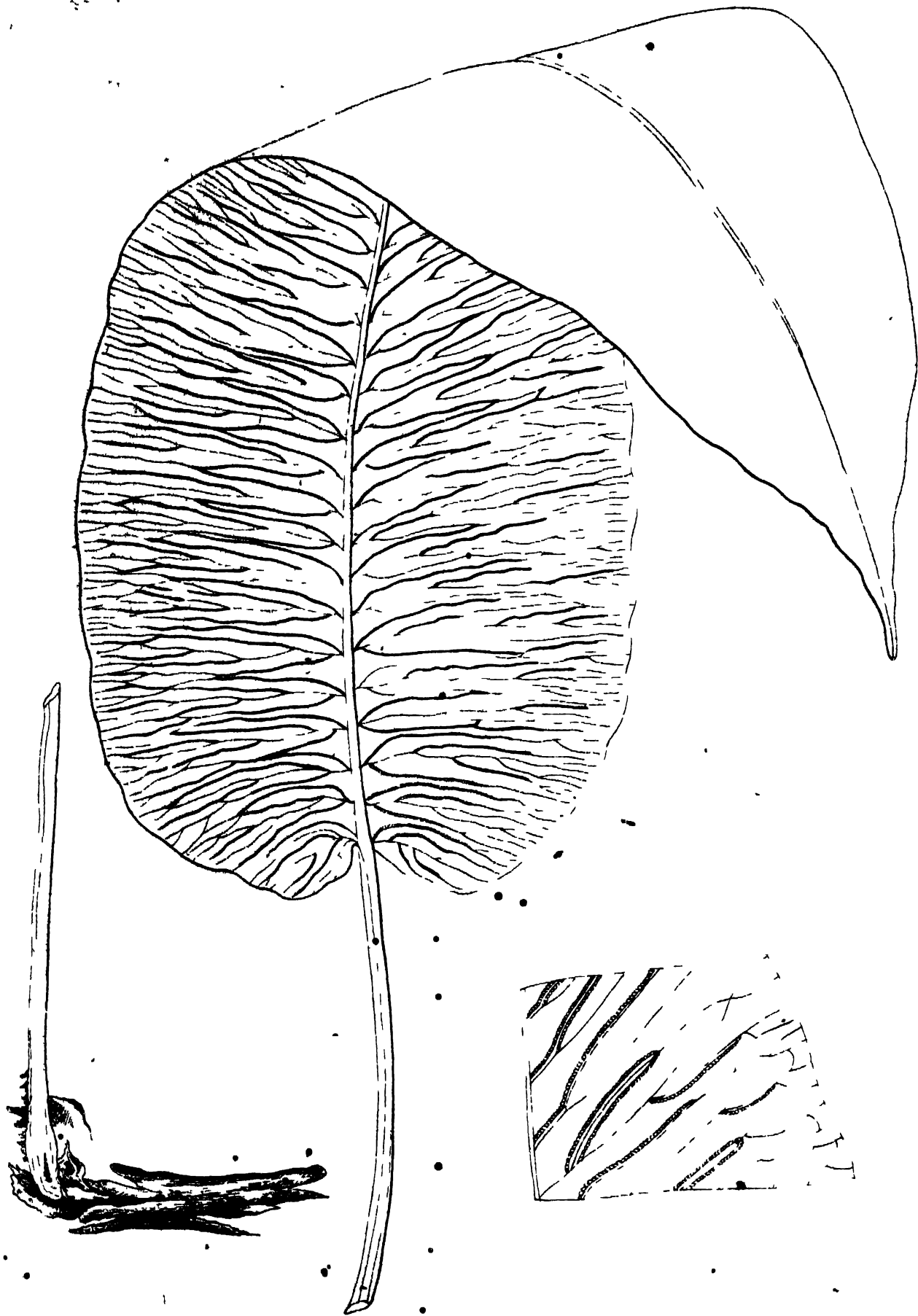
ANISOGONIUM.

ANISOGONIUM CORDIFOLIUM. (Mett.) Caudex rather stout erect, throwing out wiry roots, stipites 6 inches to a foot and more long, paleaceous especially towards the base, fronds 6-8 inches to a foot long, subcoriaceous simple and oblong acuminate entire cordate at the base, and there subpinnato-lobate with oblong very obtuse segments, and often proliferous or pinnate pinnæ 3-5 lateral ones horizontally patent sessile or nearly so, oblong-ovate acuminate subobliquely cuneate at the base, 3-4 inches long, terminal one very large long-petiolate 6-8 inches long acuminate cordate at the base, veins patent dichotomously fasciculate anastomosing towards the margin, sori very long and narrow, often diplazioid and anastomosing, involucres very narrow brown membranaceous. *Hook. Sp. Fil.* iii. p. 267 ;—*Aspl. integrifolium*, *Metten. Asplen.* p. 171. 1. Frond entire or nearly so. *A. cordifolium*, *Metten. Fil. Hort. Lips.* p. 74. t. 12. f. 6. *Diplazium*, *Bl. En. Fil. Jav.* p. 190 ;—*Hook. Ic. Pl.* t. 184. *Aspl. ovatum*, *Wall. Cat.* n. 195. *Oxygonium*, *Pr. J. Sm. Callipteris*, *J. Sm.* 2. Fronds pinnate, pinnæ 3-5. *Diplaz. integrifolium*, *Bl. En. Fil. Jav.* p. 190. *Diplazium*, *Hook. Ic. Pl.* t. 936. *Anisogonium*, *Pr. Diplazium Zollingeri*, *Kze. (Fide Metten.)*

The specimen figured is from Penang.

Hab. Penang, Singapore, Java, Isle of Leyte.

PLATE No. CCCXXXI.



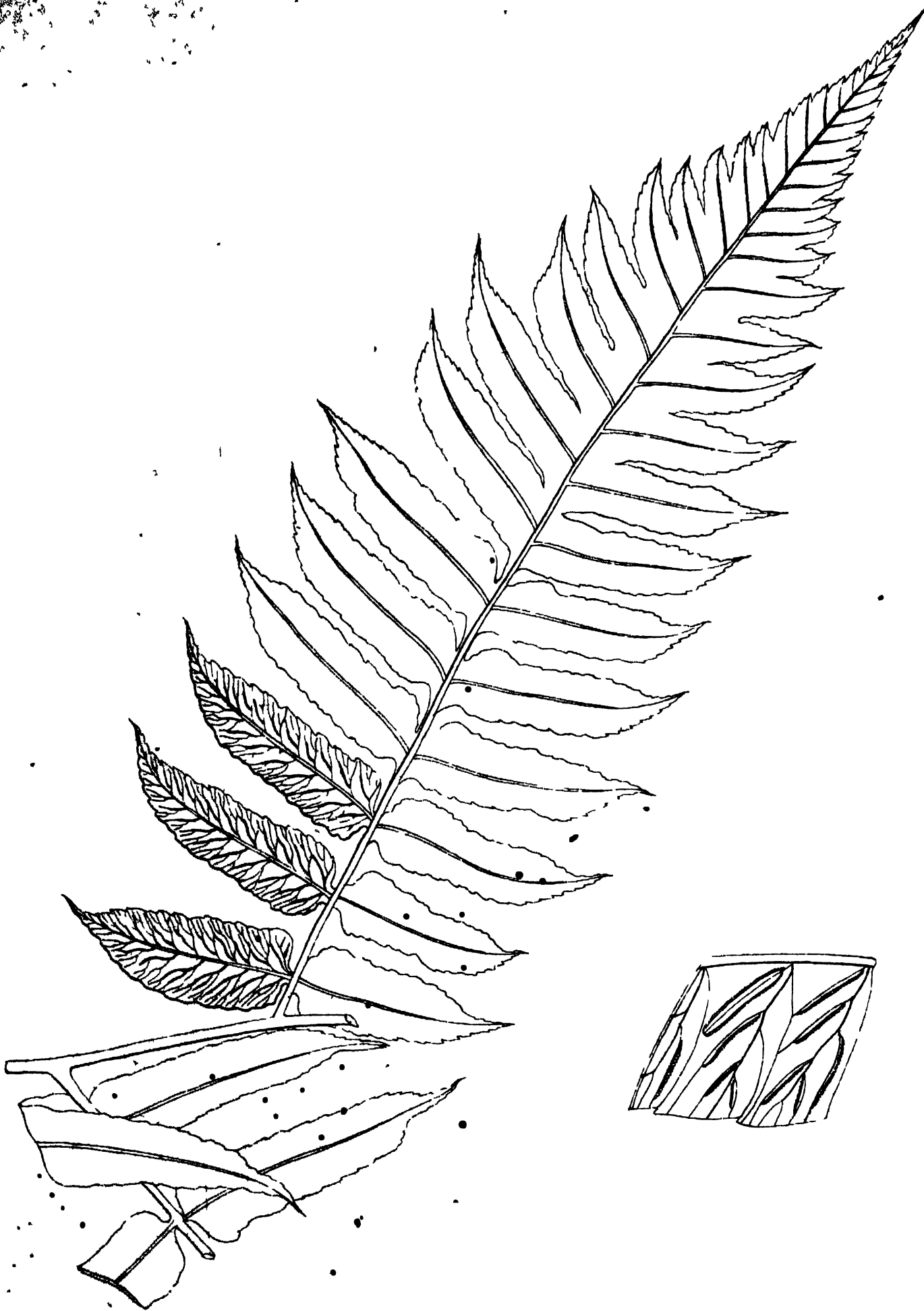
Anisogonium cordifolium Mett.

CALLIPTERIS.

CALLIPTERIS SMITHIANA. (Baker.) *Caudex* oblique, decumbent; *stipes* thick, 1 ft. long, slightly scaly below, fur-
 furaceous throughout and rather densely muricated; *fronds* 18 to 24 inches long, by nearly as broad, with 4-5 pinnate *pinnæ*, and 4-5 that
 are only pinnatifid below the point on each side, the lowest 3 inches apart, about 9 inches long, 4 inches broad; *pinnules* sessile, 2-3
 inches long, $\frac{5}{8}$ - $\frac{3}{4}$ inch broad, the edge subentire, the point slightly toothed, acuminate, the base rounded on both sides; *texture* subcori-
 aceous; both *surfaces* and *rachis* naked, the latter muricated in the lower part; *veins* in groups of 2-3 on a side, the groups usually
 joining halfway across to the edge; *sori* often $\frac{1}{4}$ inch long. *Syn. Fil. p. 245.* *A. dilatatum, J. Sm. (non Blume).*

Hab. Ceylon.

PLATE No. CCCXXXII.



Baker, det.

1. *Callipteris Smithiana* (Baker)

Spangley, det.

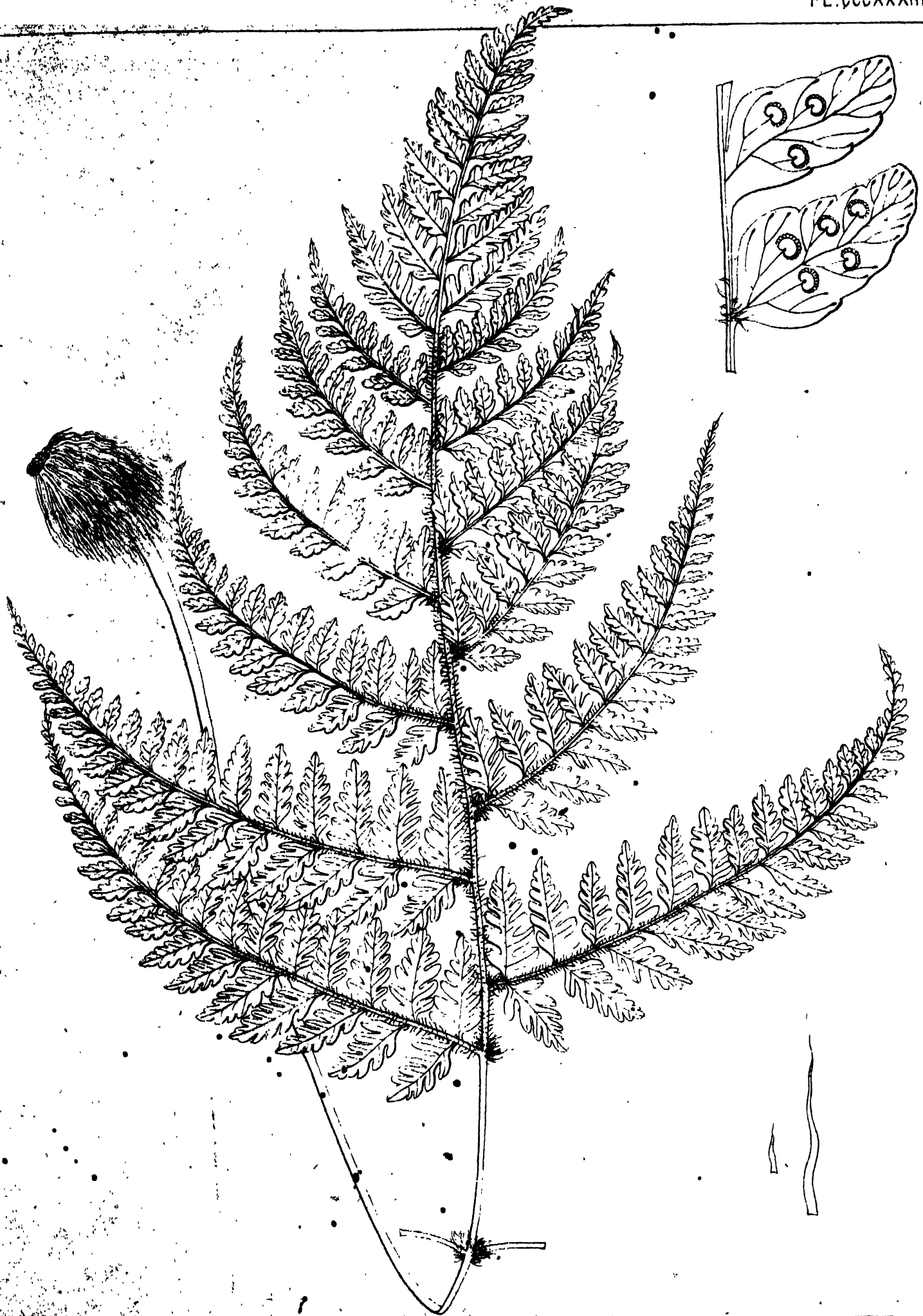
LASTREA.

LASTREA PULVINULIFERA. (Bedd.) Caudex ? stipe up to 30 inches long, furnished with a dense cushion-like mass of golden scales at the base (as in *L. odorata*), and clothed throughout (especially in the older specimens) as are the rachis and partial rachises with numerous hair-like black scales, which proceed from a broad base, and which are generally more copious at the axils of the pinnæ ; fronds ample, up to 30 inches long, (without the stipe) by 18 inches broad near the base deltoid tripinnate coriaceous-herbaceous ; pinnæ gradually decreasing in size from the base to the apex, lower pair opposite, large deltoid with the pinnules of the lower margin much the largest, remaining pinnæ alternate or rarely subopposite or opposite ; pinnules up to 4 inches long in the basal pinnæ, with their secondary pinnules equal to the primary pinnules on the upper parts of the frond ; segments obtusely rounded, entire or lobed, and occasionally dentate or crenate, glabrous on both sides, but sometimes furnished with a few weak setæ on the costules and veins on the upper side ; veinlets inconspicuous, terminating within the margin ; sori terminal on the lower veinlet ; involucre reniform glabrous.

Hab. Himalayas.—(Dr. Jerdon.)

Allied to *L. sparsa*, but more compound and well distinguished by its hirsute clothing and dense cushion-like mass at the base of the stipes ; the texture is that of *L. sparsa*.

PLATE No. CCCXXXIII.



Lactuca pulvinulifera Nutt.

Darwin, Lill.

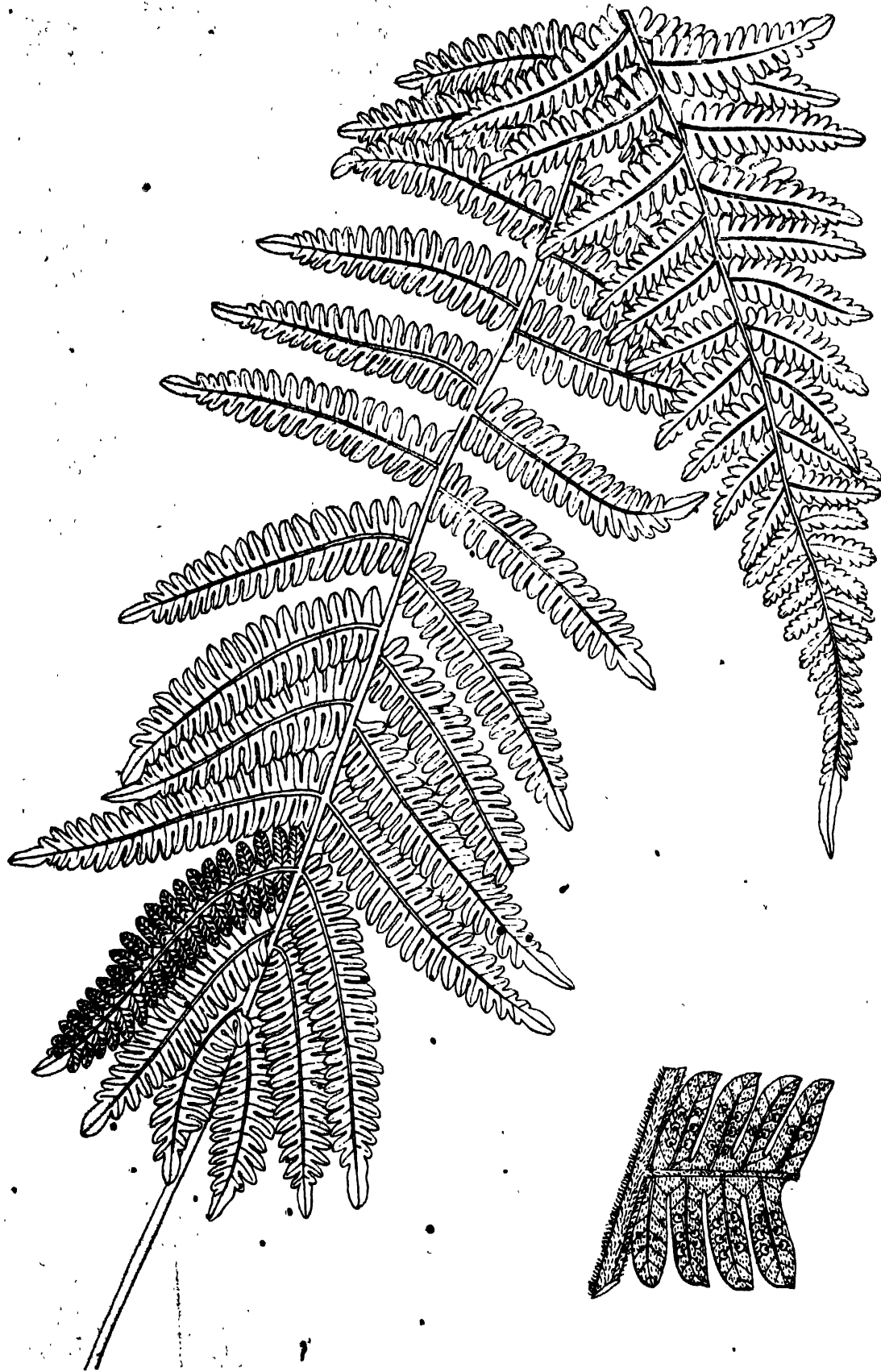
LASTREA.

LASTREA VISCOSA. (Baker.) *Stipe* 6 inches or more long, firm, erect, reddish brown, slightly scaly, finely *villose*; *fronds* 9-12 inches long, 4-5 inches broad, oblong lanceolate; *pinnæ* close, 2-3 inches long, $\frac{3}{4}$ -1 inch broad, cut nearly to the rachis into close, spreading linear-oblong lobes under 1 line broad; *texture* herbaceous; *colour* dark-green; *rachises villose*; under *surface* densely glandular; *veinlets* 5-6 on a side; *sori* medial. *Syn. Fil.* p. 264. *Lastrea*, *J. Sm.*

The specimen figured is from Malacca.

Hab. Malacca, Philippines and Borneo.

PLATE No. CCCXXXIV.

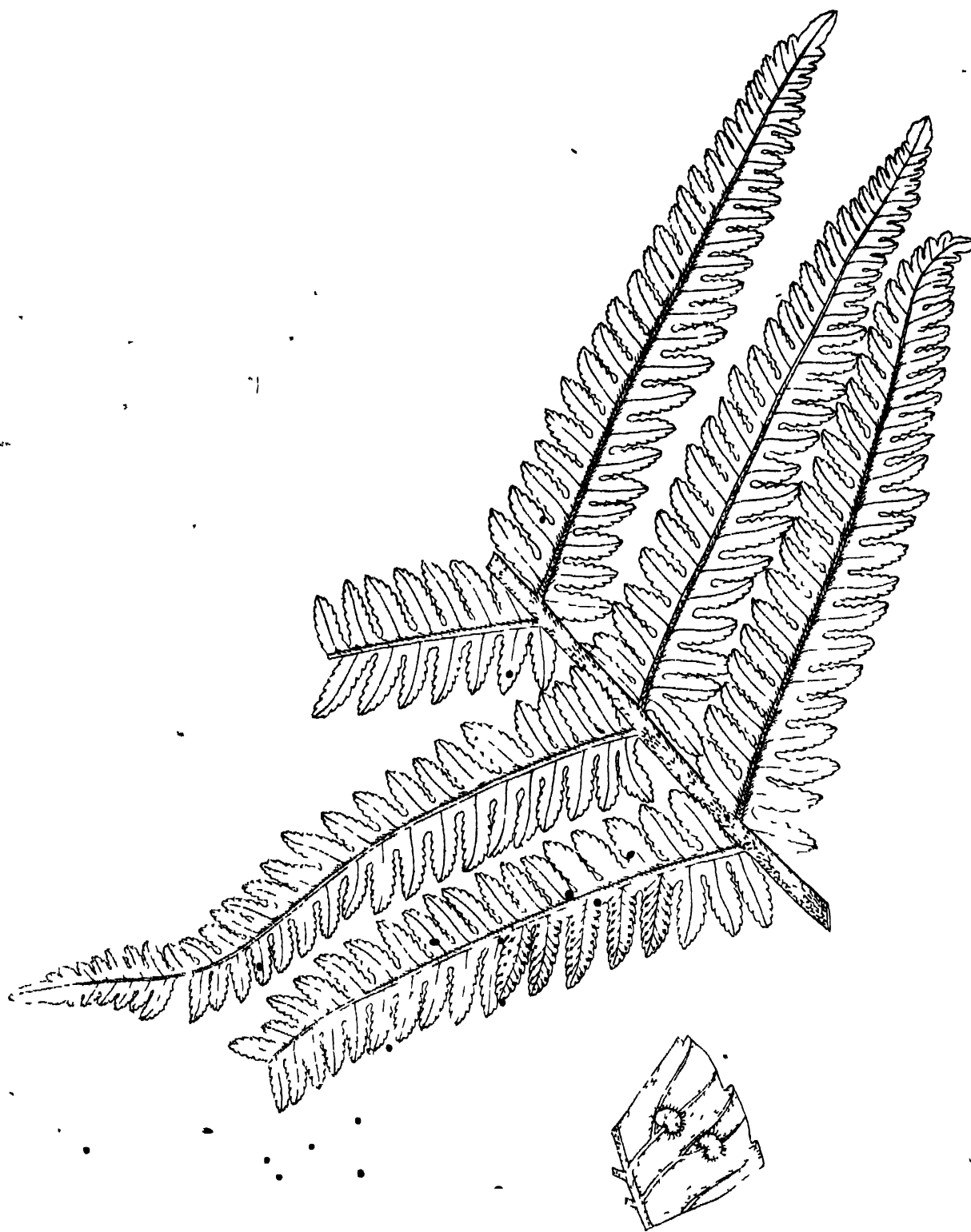


LASTREA.

LASTREA GRISEA. (Baker.) Stipes, firm, erect, grey, villose upwards; *fronds* 1½-2 feet long, 8-9 inches broad, oblong-lanceolate; *pinnæ* close, 3-4 inches long $\frac{3}{4}$ - $\frac{7}{8}$ inch broad, narrowed gradually from the base to the apex, cut down nearly to the rachis, into blunt, entire lobes, 2 lines broad, with recurved edges; *texture* subcoriaceous; *rachis* villose, and veins beneath slightly so; *veinlets* about 10 on a side, mostly forked; *sori* small, submarginal; *involucre* ciliated. *Syn. Fil. p. 271.*

Hab. Cochín (only detected by the Reverend Mr. Johnstone).

PLATE No. CCCXXXV.



Lashia grisea (Baker)

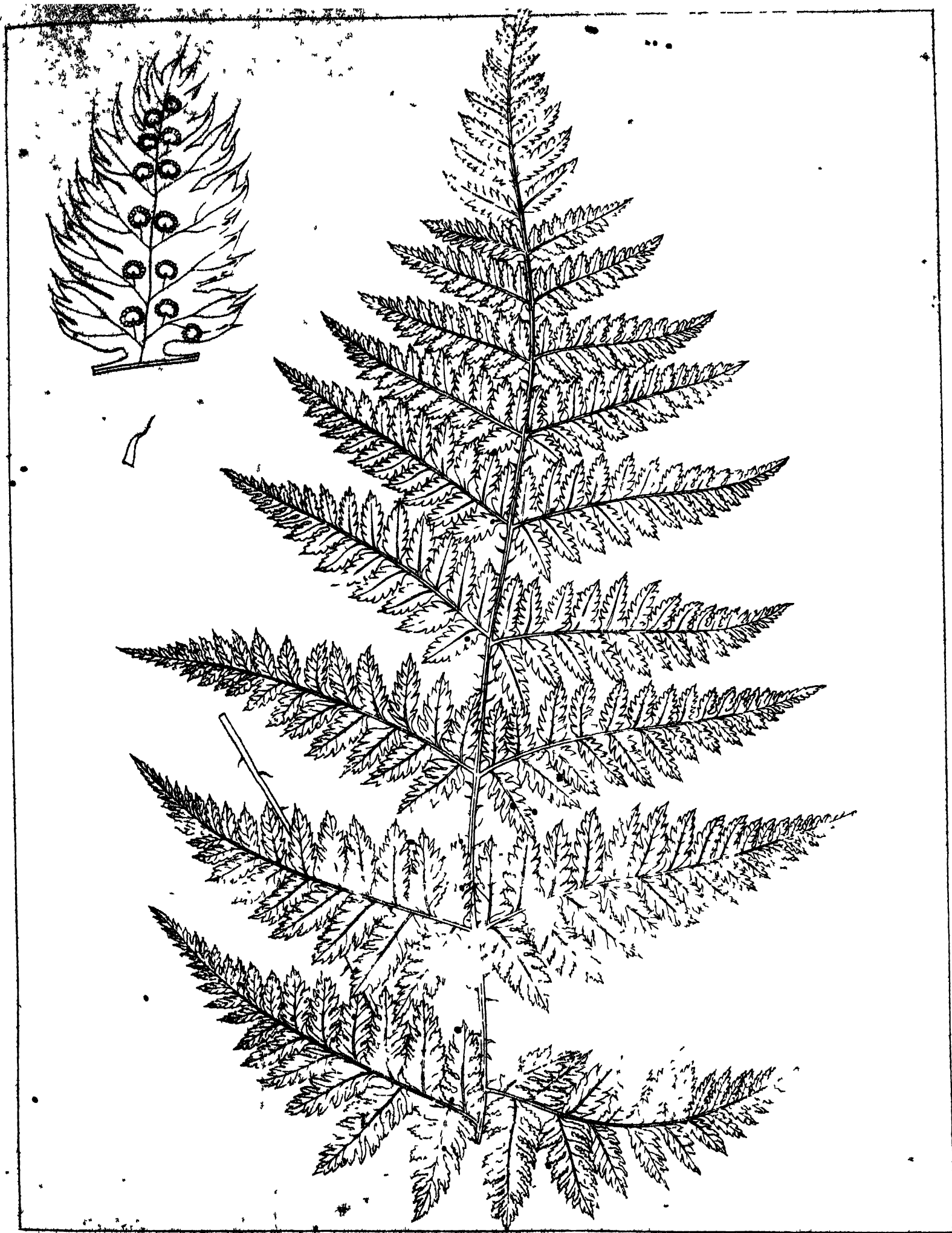
Dumphy, herb.

LASTREA.

LASTREA SPINULOSA. (Desv.) *Stipes* tufted, about 1 foot long, sparingly clothed with ovate concolorous scales; fronds 12-18 inches long, 6-8 inches broad, oblong-lanceolate; lower *pinnæ* subdeltoid, 3-4 inches long, $1\frac{1}{2}$ -2 inches broad, the lowest pair about equal to the next; *pinnules* ovate-lanceolate, the largest about 1 inch long, $\frac{1}{2}$ inch broad, cut down to the rachis below into close oblong lobes with copious aristate teeth; *texture* herbaceous, rachis stramineous, scarcely scaly; under surface not glandular; colour pale-green; *involucre* not gland-ciliated. *Hk. Brit. F. t.* 20.— β . *Nephrodium dilatatum*, Desv.; *scales* denser and narrower, dark-brown in the centre; *fronds* ovate-lanceolate or subdeltoid, larger and more deeply cut, the colour a darker and brighter green; the *pinnæ* closer, the under surface often finely glandular, the *involucre* gland-ciliated. *Hk. B. F. t.* 19.— γ . *N. remotum* (A. Br. sub Aspid.); *scales* lanceolate, concolorous, extending to the rachis; *fronds* oblong-lanceolate, about 2 feet long, 6 inches broad; *pinnæ* lanceolate, close; *pinnules* ovate-oblong, only the lowest free, the largest about 1 inch long, $\frac{1}{2}$ inch broad, cut half-way down to the rachis or more, spinulose teeth few; under side and *involucre* not glandular. *Hk. Brit. F. t.* 22.— δ . *N. Boottii* (Tucker, sub Aspid.); habit and scales of α ; *pinnæ* distant, lanceolate; lowest *pinnule* scarcely free, the largest about $\frac{1}{2}$ inch long, $\frac{1}{2}$ inch broad, cut from one-third to half-way down to the rachis below. *L. collina*, Newm.—*e. lepidota*, Moore; rachises chestnut brown, scaly; *fronds* subdeltoid; lower *pinnæ* deltoid, 5-6 inches each way; lowest *pinnules* much the largest, often 3 inches long, 2 inches broad, its *segments* cut down to the rachis below and with lobes again deeply pinnatifid.—*Syn. Fil. p.* 275.

Hab. W. Himalayas, Arctic Europe and America, southward to Madeira, the Mediterranean and Carolina, Bourbon and Cape Colony. A very variable plant.

PLATE No. CCCXXXVI.



Lathraea, Dru.

Lathraea squarrosa (Dru.)

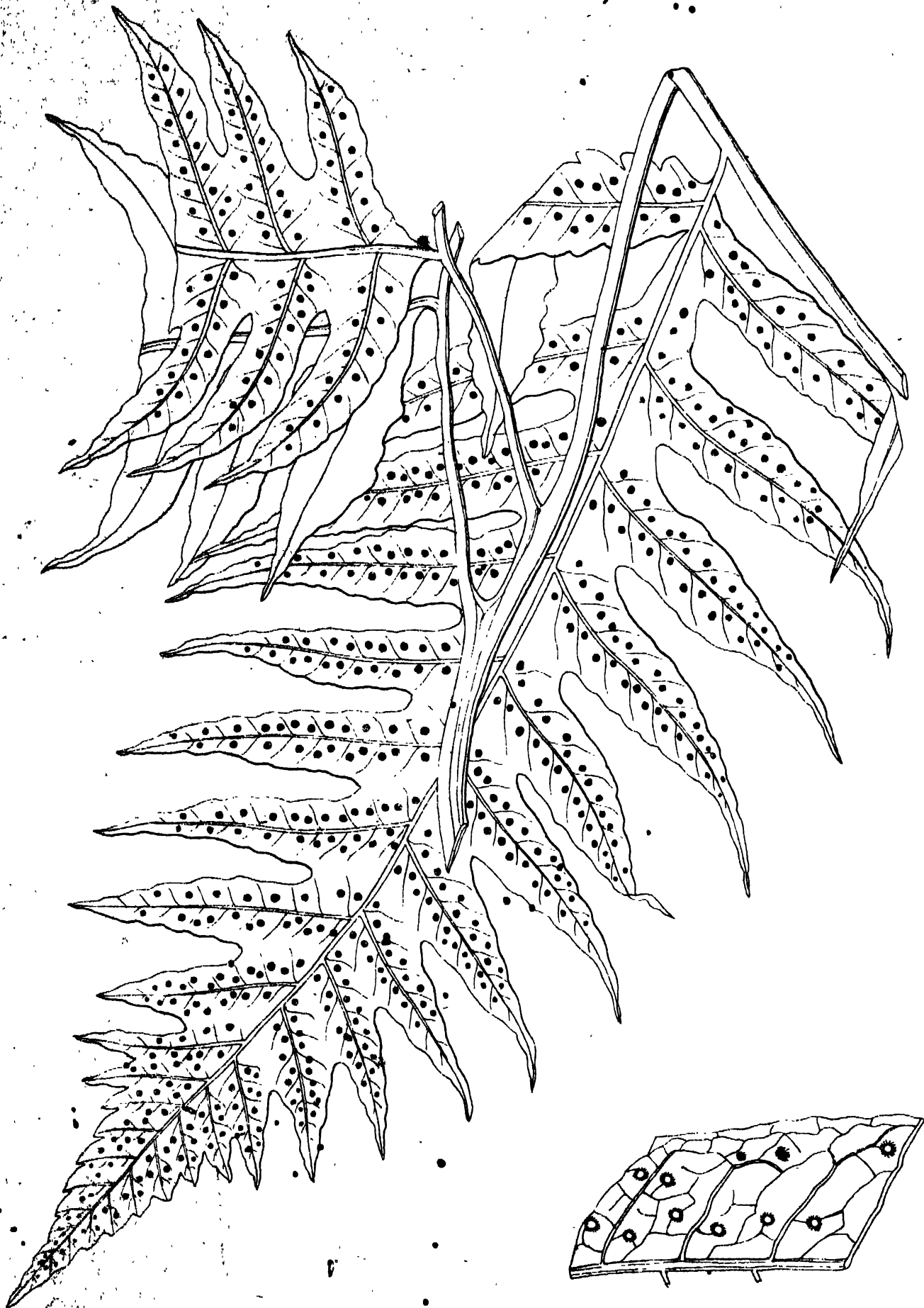
Lathraea, Dru.

SAGENIA.

SAGENIA GRIFFITHII. (Baker.) *Stipes* 1-2 feet long, brownish, not glossy; *fronds* 3-4 feet long, with a large terminal *pinna* cut down nearly to the rachis in the lower part into lanceolate divisions, with deep lanceolate-acuminate lobes, below this several pinnæ on each side, the lowest deltoid, 1 foot or more long, by nearly as broad, deeply pinnatifid above, pinnate below; *texture* papyraceo-herbaceous; main veins distinct to the edge, with copious free included veinlets; *sori* rather large, in two rows, nearly all terminating free veinlets. *Syn. Fil. p.* 300.

Hab. Birmah. Nearly allied to *Sagenia coadunata*, but the venation is closer, and it has copious free veins and sori not on the connected veinlets.

PLATE No. CCCXXXVII.



Baker, det.

Adiantum lunulatum (Baker.)

Dunphy, Epith.

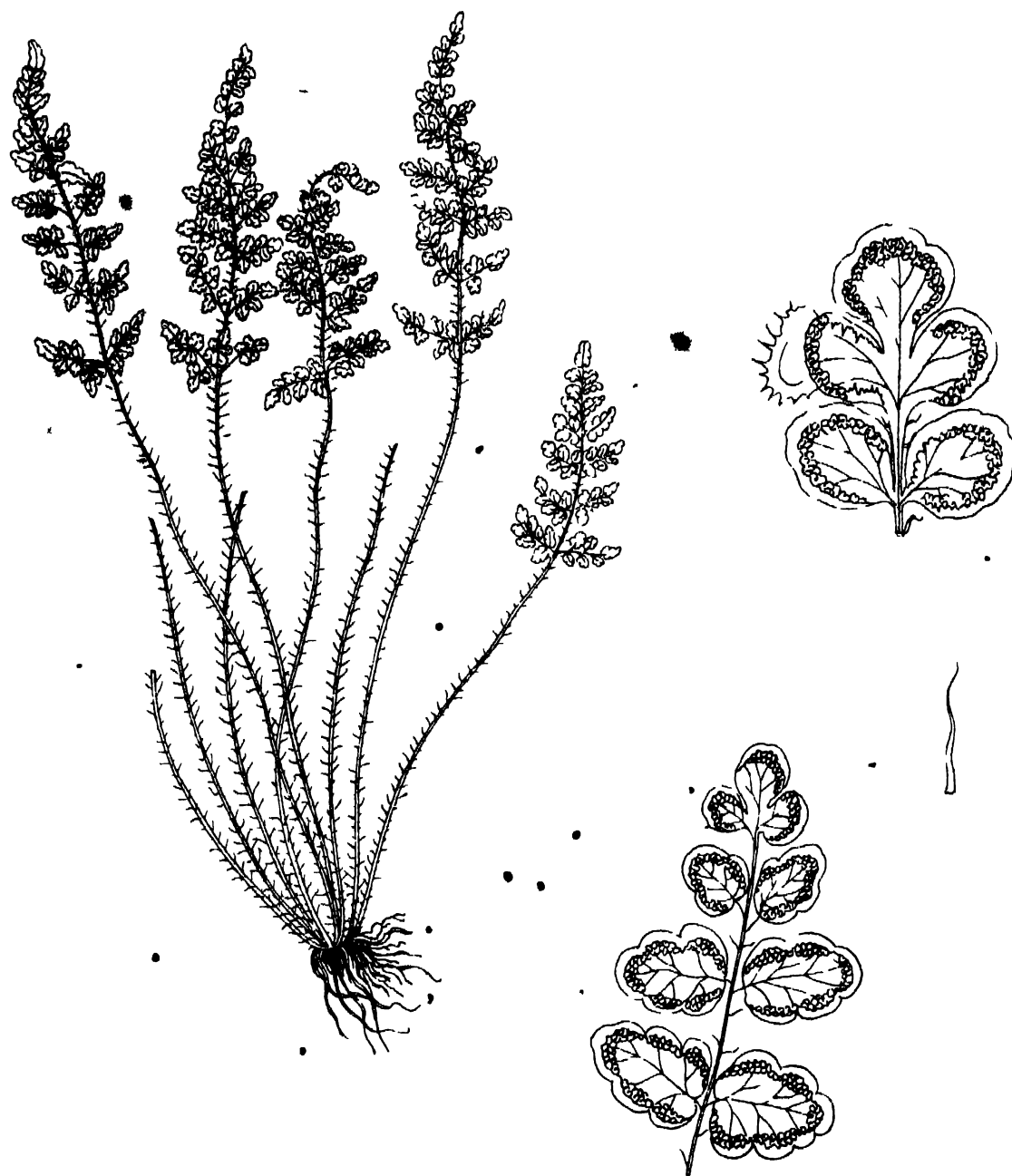
CHEILANTHES.

CHEILANTHES FRAGRANS. (Webb. and Berth.) Stipes caespitose, wiry, 1-3 inches long, densely clothed with reddish-brown linear scales; *fronds* 2-3 inches long, about 1 inch broad, ovate-acuminate, bi or triplinnatifid; *pinnæ* opposite, $\frac{1}{2}$ - $\frac{3}{4}$ inch long, $\frac{1}{4}$ - $\frac{1}{2}$ inch broad, deltoid, cut down to the rachis below into several sinuato-pinnatifid linear oblong lobes; *texture* subcoriaceous; *rachis* polished, but slightly scaly, both surfaces green and naked; *sori* small, copious; *involucre* light-brown, membranaceous, toothed. *Syn. Fil.* p. 134;—*Hook. Sp. Fil.* ii. 81. *Polypodium fragrans*, Linn. *C. odora* and *suaveolens*, Swartz. *C. Maderensis*, Lowe.

The specimen figured is from the Himalayas.

Hab. N. W. Himalayas (5,000 ft.)—South of France, Spain, Italy, Greece, Turkey, Canaries, Madeira, Algeria, Syria, and Afghanistan.

PLATE No. CCCXXXVIII.



Cheilanthes fragrans

Cheilanthes fragrans (Walt. & Richt.)

Cheilanthes fragrans

PÆCILOPTERIS.

PÆCILOPTERIS SUBREPANDA. (Hook.) *Rhizome* woody, wide-creeping ; *stipes* of barren *fronds* stout erect, nearly naked ; barren *fronds* varying from simple, 1 foot long, 1½-2 inches broad, to 2 feet long, 1 foot broad, copiously pinnate, with several, linear-oblong entire or subrepand *pinnæ* on each side, which are sometimes 6-9 inches long, 2 inches broad ; *texture* subcoriaceous ; *surfaces* and *rachis* naked ; main *veins* distinct nearly to the edge, with copious areolæ with free veinlets between them ; *fertile fronds* like the others, but smaller. *Syn. Fil. p.* 419 ;—*Hook. Sp. Fil v. p.* 275.

The specimen figured is from Penang.

Hab. Penang, Luzon.

PLATE No. CCCXXXIX.

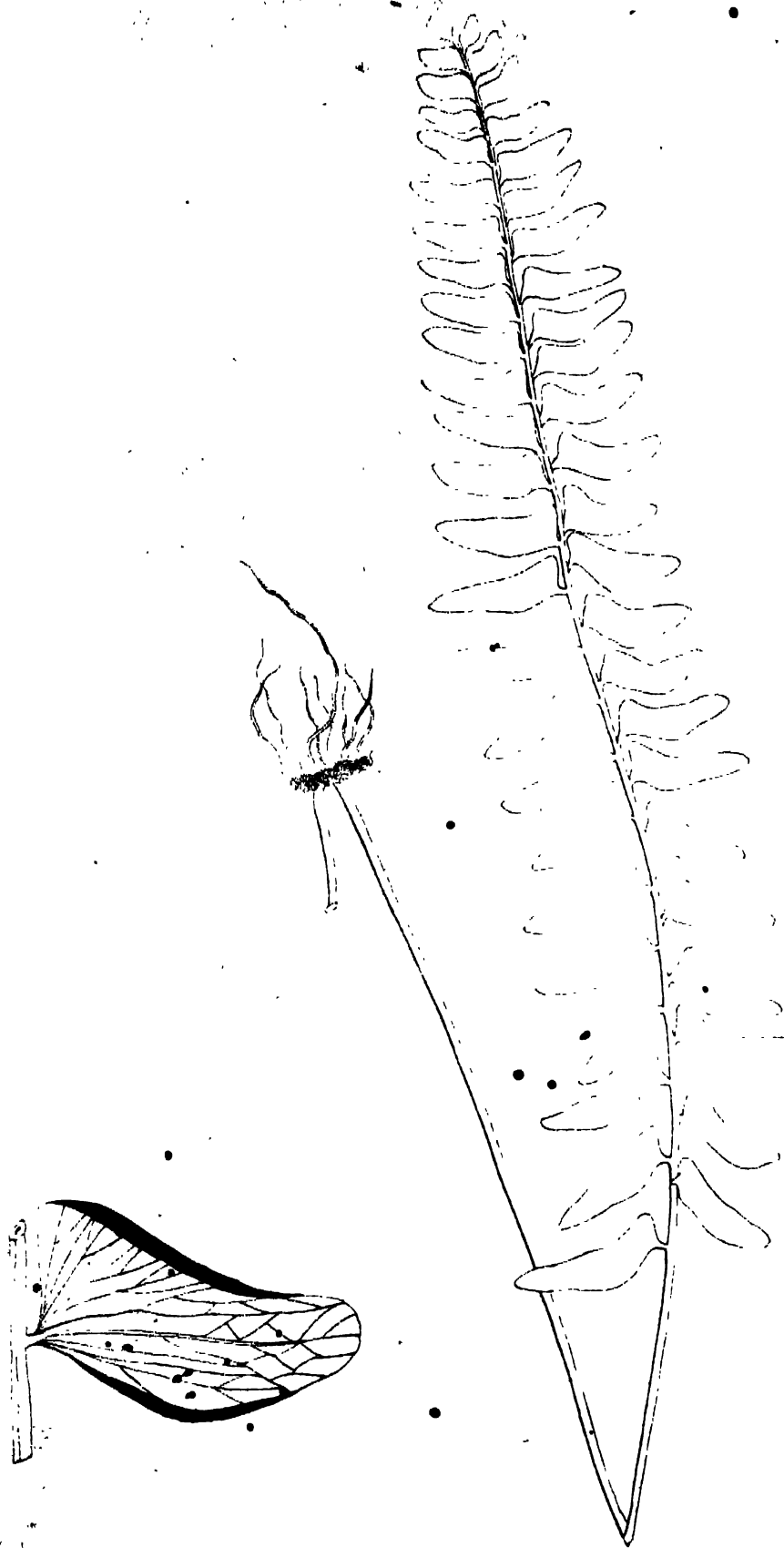


SCHIZOLOMA.

SCHIZOLOMA GUERINIANUM. (Gand.) *Rhizome* creeping, paleaceous; *stipes* 4-6 inches long; *fronds* 6-9 inches long, oblong-lanceolate, simply pinnate; *pinnæ* $\frac{1}{2}$ - $\frac{3}{4}$ inch long, ovate or oblong, nearly entire, horizontal or falcate, slightly auricled at the base on the upper edge; *texture* subcoriaceous; *sori* in a continuous line along both margins. *Syn. Fil.* p. 111;—*Hook. Sp. Fil.* i. p. 221.

Hab. Malay Peninsula and Islands.

PLATE No. CCCXL.



Baker, det.

Adiantum lunulatum (L.) Link.

Dumphy, det.

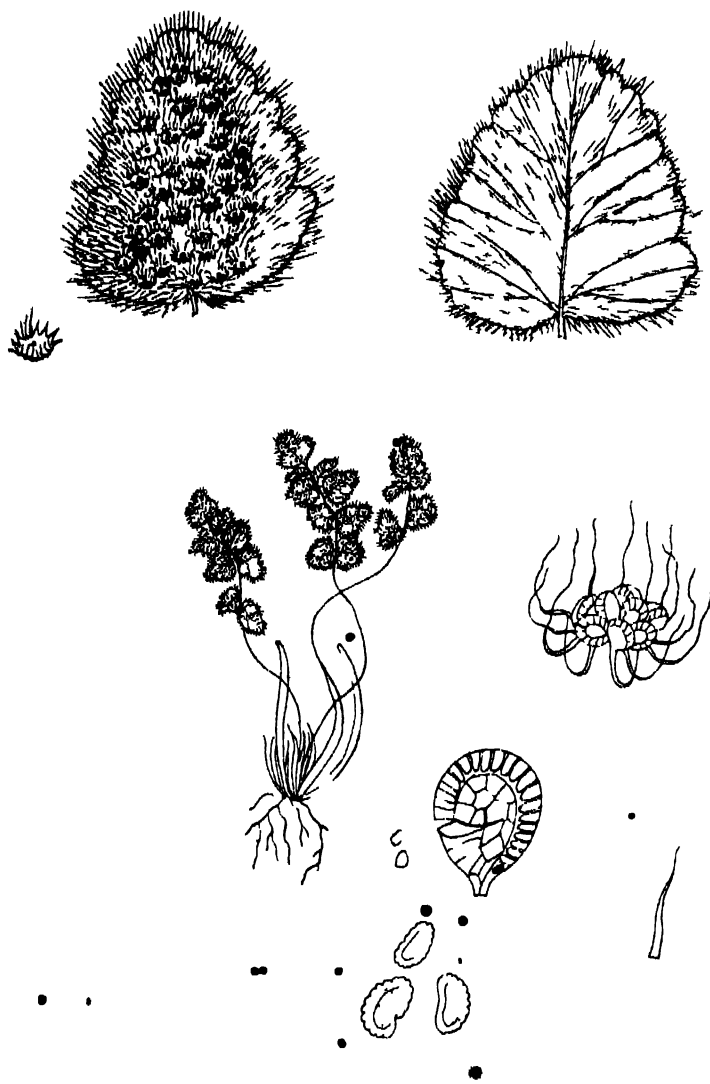
WOODSIA.

WOODSIA LANOSA. (Hook). *Fronds* oblong pinnated, quite shaggy with most copious soft long ferruginous hairs, mixed with very narrow, long, chaffy subulate scales; *pinnæ* subcordate, dentate or lobato-dentate, scarcely pinnatifid. *Syn. Fil.* p. 47.

The specimen figured is from Kumaon, alt. 11,000 feet.

Hab. N. India; Kumaon mountains 11-12,000 feet. Sikkim, alt. 14-16,000. Perhaps a sericeo-tomentose state of the European *W. hyperborea*.

PLATE No. CCCXLI.



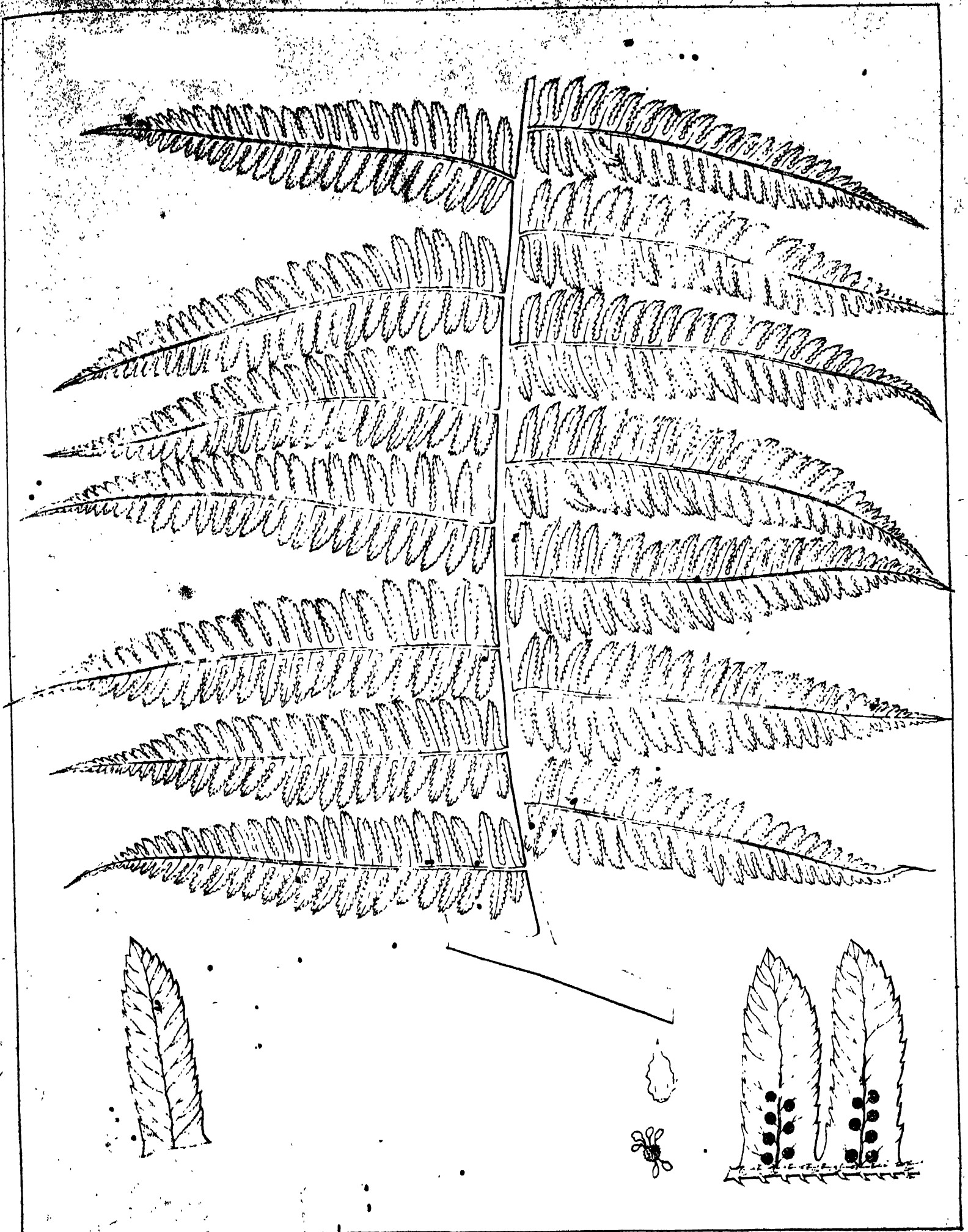
Wedelia lanosa (Hork)

ALSOPHILA.

ALSOPHILA ORNATA. (*J. Scott.*) Arborescent, stipes paleaceous at the base, slightly muricated, and as well as the main rachises glossy purplish-brown; *fronds* herbaceo-membranaceous, upper surface glabrous, brownish green when dry, sparsely scaly on the rachis and costæ, increasingly so on the underside of the latter; *primary pinnae* oblongo-lanceolate, rather abruptly contracted into a short deeply pinnatifid apex; *pinnules* nearly all petiolate lanceolate-oblong acuminate, deeply nearly to the costules pinnatifid, segments oblong ovate in the sterile, (narrow oblong in the fertile), in both obtuse slightly falcate serrated; *veins* forked, rarely twice forked, with a few simple ones; *sori* rather small, about the middle or below the middle of the veinlets on the lower half of the segments. *J. Scott* MS.

Hab. Sikkim, on the banks of the Rungbee, at an elevation of 2,500 feet; called Dang-pashin, and Poschok by the Lepchas.

PLATE N^o. CCCXLII.



C. G. Smith, del.

Alsophila ornata (I. Scott.)

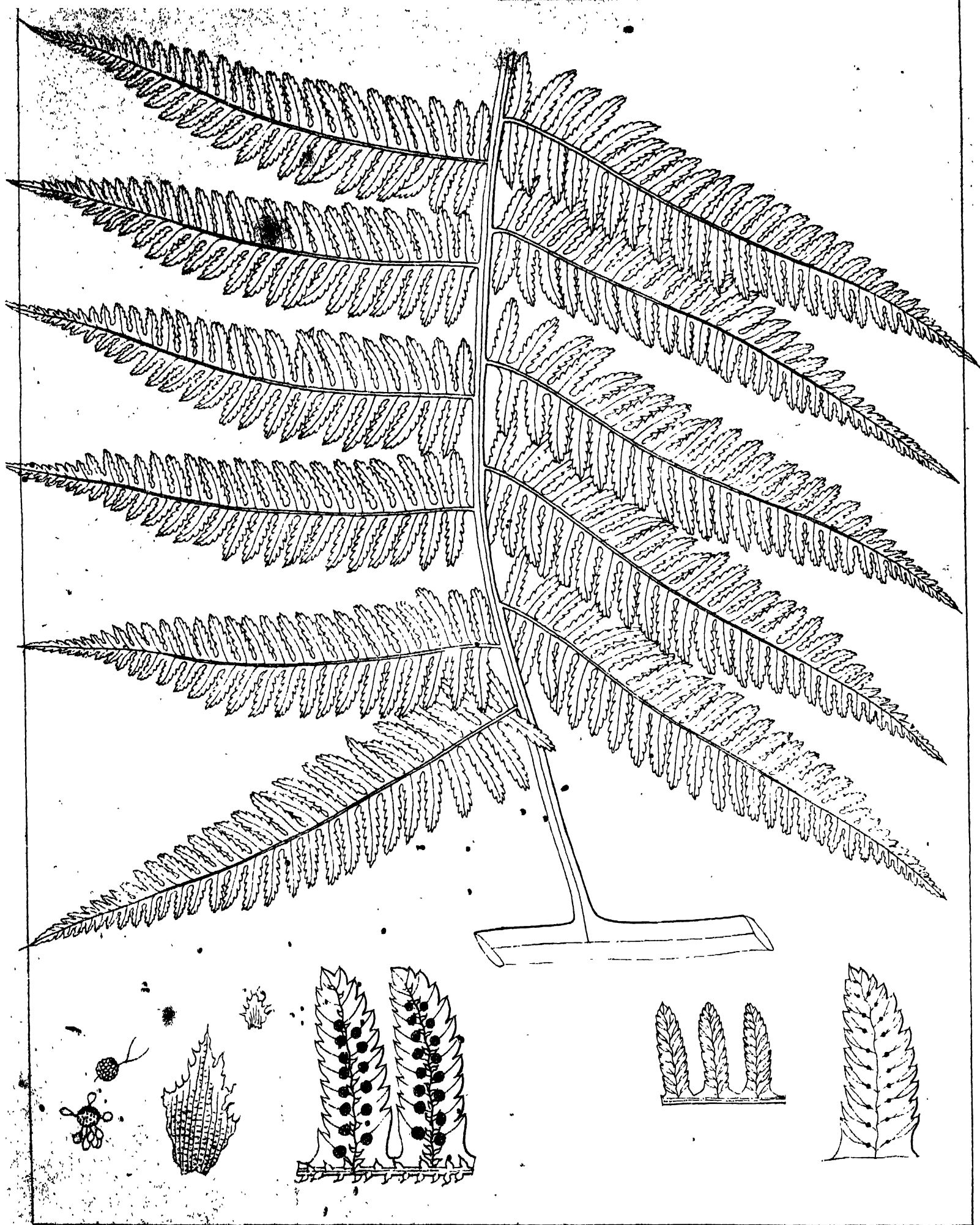
Thompson, Tipton

ALSOPHILA.

ALSOPHILA OLDHAMI. (Bedd.) Principal rachises $\frac{1}{2}$ an inch thick, deep purple, asperous; *fronds* ample, tripinnate herbaceous-membranaceous; *primary pinnae* about 2 feet long by 8-9 inches broad, oblong acuminate, secondary *pinnae* 4-5 inches long by about 1 inch broad, lanceolate acuminate, costa beneath very scaly, above slightly hairy, cut down nearly to the rachis into numerous linear oblong blunt-toothed segments on each side; segments rather distant, with a broad base between each, of very equal breadth in their whole length, glabrous above, scaly on the costules beneath; veins simple (generally), or once forked; sori elevated conspicuous, one to each vein (except the 2-3 upper ones), rather below the middle, spore cases mixed with a few jagged scales.

Hab. Khasya Hills.—(Mr. Oldham.)

PLATE No. CCCXLIII.



Adiantum alatum (Radd.)

Dumortier

§ DIDYMOCHLÆNEÆ.

* * Veins connivently anastomosing.

MESOCHLÆNA. R. Brown, Pl. Jav. Rar. 5.

(Sphærostephanos. J. Smith ;—Polypodil. Sp. Wallich ;—Stegnogrammatis. Sp. Fee.)

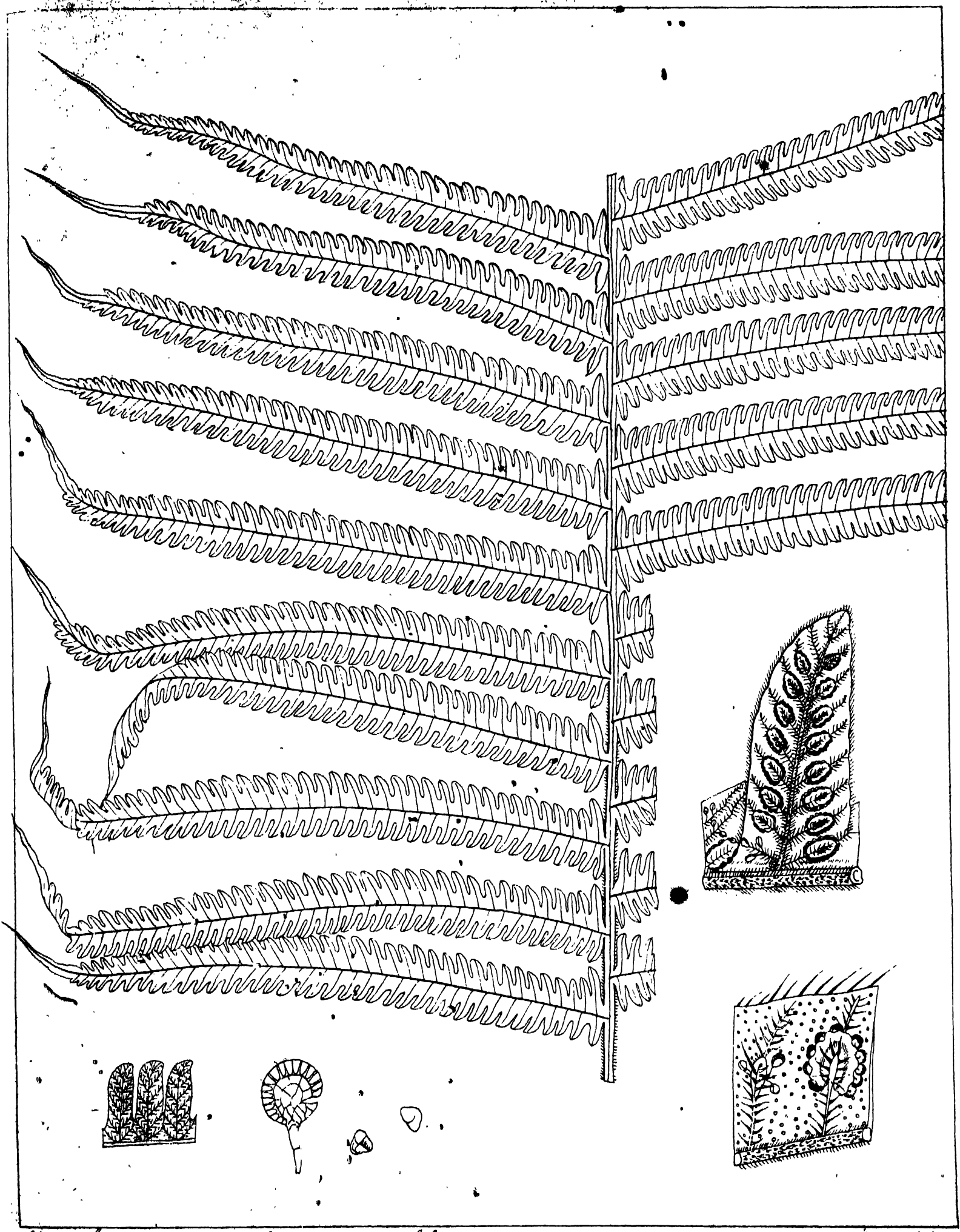
GEN. CHAR : Sori indusiate, oblong, parallel, oblique, the *receptacles* medial, crest formed, on the simple veins ; *indusium* membranaceous, rounded at the apex, truncate at the base, attached longitudinally along the middle of the sorus, the margins glandular, free ; veins simple, from a central costa, the lower or more opposite pairs angularly connivent-anastomosing (as in Nephrodium.)

Fronde large herbaceous pinnato-pinnatifid hairy, rhizome short erect, sori often crowded and becoming confluent, the indusium then pushed up vertically between the spore cases. (Moore.)

MESOCHLÆNA JAVANICA. (R. Br.) Caudex erect, stipes tufted, short ; fronds 2-3 feet long, 12-18 inches broad, simply pinnate ; pinnae close, very numerous, spreading, dwindling down below to mere auricles, the largest 6-9 inches long, $\frac{1}{2}$ inch broad, cut down halfway or more to the rachis into close linear-oblong lobes, rachis and lower surface villose ; veins very close pinnated, 12 or more on each side in a lobe ; sori small, close, ultimately confluent. Aspid, Bl. Mett. ; Nephrodium Javanicum, Hk. Sp. iv. p. 67., Fil. Ex. t. 61 ; Mesochlæna, R. Br. MSS. ; Sphærostephanos, J. Sm. Syn. Fil. p. 248.

Hab. Malayan Peninsula and Islands.—Habit and venation of *Eunephrodium*, *M. asplenoides*, J. Smith, is a villose variety with narrower pinnae than usual, with short oblong-deltoid lobes.

PLATE No. CCCXLIV.



Fronds, etc.

Mesochlona javanica (H. Br.)

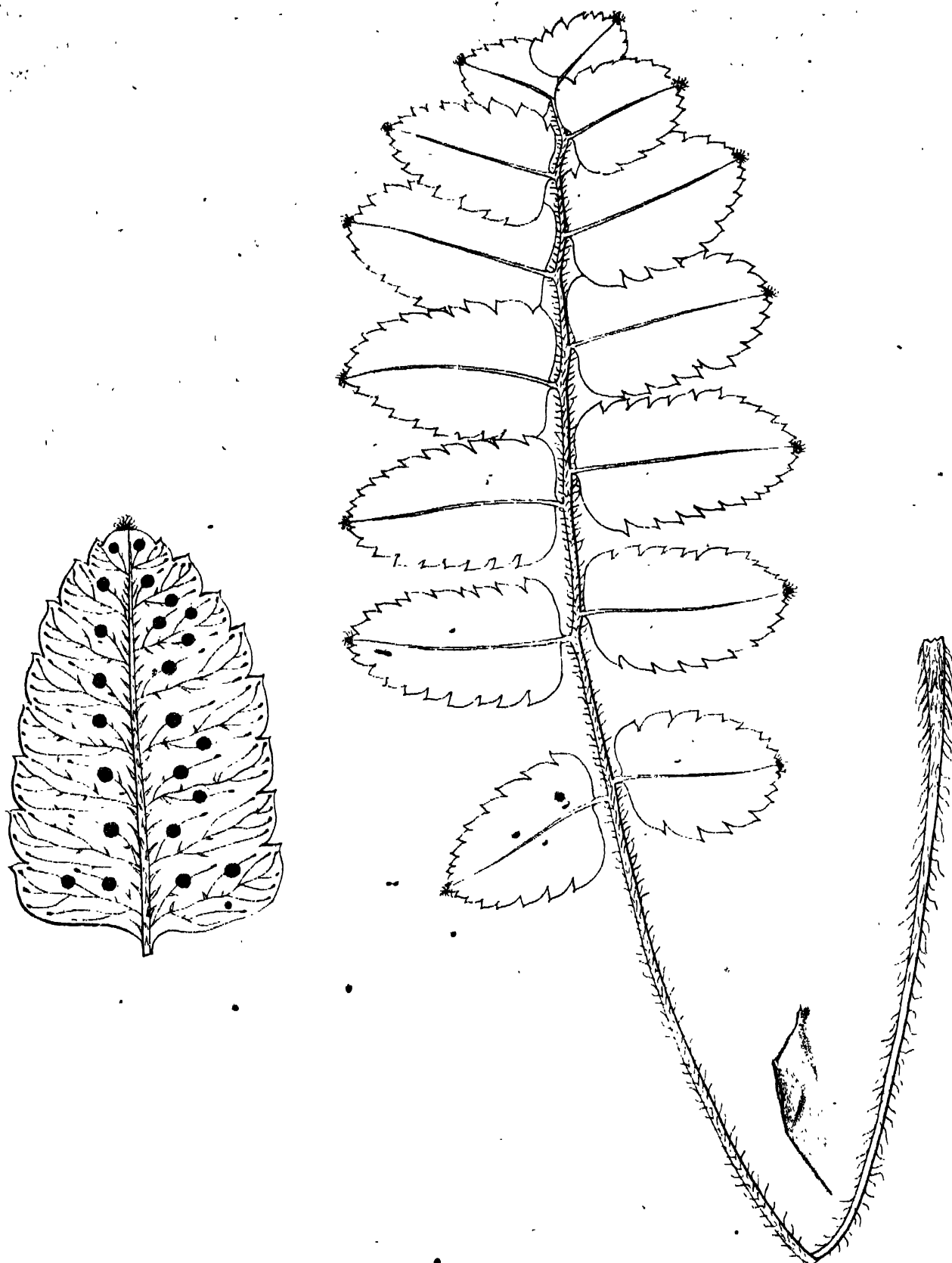
Detail of sori

POLYPODIUM.

POLYPODIUM SCOTTII. (Bedd.) Caudex suberect, stout tufted, clothed with brownish-black subulate scales as is the base of the stipe, fronds pinnate oblong with the stipe 10-12 inches long, by about 3 inches broad, rachis furnished with hair-like scales, pinnae alternate 6-7 approximated pairs, with a terminal one, lower pair not much decreased in size, all short oblong or ovate obtuse from a square unequal base about $1\frac{1}{2}$ inches long, by a little less than 1 inch broad, and furnished with falcate acute serratures, glabrous on both sides but with a few weak setae or scales on the costa and veins, especially beneath, veins in pinnate groups, the lower veinlet or the two lower not reaching more than halfway to the margin, upper ones terminating in a dot within the margin, sori medial on the lower 2-3 veinlets.

Lately discovered by Mr. J. Scott in the valley of the Rungio (elevation 2,000 feet), near the Govt. Cinchona Gardens. The venation is that of *Lastrea cuspidata*, and it may perhaps be an abnormal form of that species.

PLATE No. CCCXLV.



Polypodium Scottii (Bedd.)

DESCRIPTION OF SPECIES NOT FIGURED.

LINDSÆA PECTINATA. (Blume.) Rhizome stout, wide-creeping, scandent, paleaceous; stipe erect, very short; frond 12-18 inches long, 1-2 inches broad, simply pinnate; pinnae $\frac{1}{2}$ - $\frac{3}{4}$ inch long, $\frac{1}{4}$ inch deep, the lower line nearly straight, the upper margin round, slightly crenate, the point not very blunt, close together, but not imbricated; texture pellucido-herbaceous; sori in an interrupted line along the upper edge. *Hk. Sp. i. p. 287.* *L. oblongifolia, Reinw. Hk. Sp. i. p. 206 t. 61 D.*;—*Syn. Fil. p. 106.*

Hab. Assam and Malayan Peninsula and Islands.—Habit of *Lindsæa repens, L. Calomelanos, Kunze*, from Java, is said to be closely allied.

NIPHOBOLUS FLOCCIGERUS. (Mett.) Rhizome wide-creeping, the scales squarrose, lanceolate-acuminate, bright ferruginous; stipe very short; fronds 6-12 inches long, $\frac{1}{4}$ - $\frac{1}{2}$ inch broad, narrowed gradually to both ends, the edge entire; texture rigid, coriaceous; upper surface naked, lower densely matted with subferruginous tomentum; veins hidden; sori immersed amongst the tomentum, covering the whole upper part of the frond. *Hook. Sp. v. p. 45.* *Antrophyum niphoboloides, Hk. Sp. v. p. 94*;—*Syn. Fil. p. 351.*

Hab. Northern India, Philippines, Malacca.—Most like *N. porosus*, but the frond much narrower and texture more rigid.

SELLIGUEA CAUDIFORMIS. (Hook.) Rhizome woody, creeping, the scales large, pale-brown, lanceolate; stipe 6-9 inches long, firm, erect, glossy, pale-brown; frond 6-9 inches long, ovate-oblong acuminate, the sterile ones 3-4, the fertile ones 1-2 inches broad; texture coriaceous, both sides naked; main veins distinct to the edge, the veinlets obscure; sori in one continuous or interrupted row between the main veins. *Hook. Sp. v. p. 158*;—*Bot. Mag. t. 5328*;—*Syn. Fil. 389.*

Hab. Mergui, Moulmein, and Malayan and Polynesian Isles to Tahiti and New Caledonia.

PÆCILOPTERIS BLUMEANA. (Hook.) Rhizome woody, wide scandent; stipe of barren frond 6 inches long, decidedly scaly; barren frond 1-3 feet long, 1 foot or more broad, with numerous sessile pinnae on each side, which are 4-6 inches long, 1 inch broad, the apex acuminate, the edge slightly toothed, the base rounded; texture membranous; rachis and midrib beneath slightly scaly, areolæ hexagonal, without free veinlets; fertile frond with distant pinnae 4-8 inches long, $\frac{1}{2}$ - $\frac{3}{4}$ inch broad.—*β. Samoense*; stipe of barren frond 1 foot long, the central pinnae $2\frac{1}{2}$ inches long, $\frac{1}{2}$ inch broad, more distinctly toothed. *Hook. Sp. v. p. 268*;—*Syn. Fil. p. 423.*

Hab. Assam, Java, Philippines, and Samoa.—*Lomagramme pteroides, J. Sm. Hk. Gen. Fil. t. 97* (Luzon, Cuming), is apparently an abnormal form of this, with the sori in a line along the edge of pinnae rather narrower than the usual barren ones. *A. Requiennianum, Gaud.*, should not unlikely also be referred here.

ELAPHOGLOSSUM NORRISII. (Hook.) Caudex stout, woody, the scales long, linear, dull-brown; barren frond sessile, or nearly so, tufted, 12-18 inches long $\frac{3}{4}$ -1 inch broad, the point blunt, the lower half narrowed very gradually; texture coriaceous; both sides nearly naked; veins immersed, indistinct; fertile frond much narrower than the other. *Hook. Sp. v. p. 215*;—*Syn. Fil. p. 401.*

Hab. Penang, (Sir W. Norris), Mactier.—Not unlikely identical with the Javan *A. melanostictum, Blume*. It is like flaccidum in the shape of the barren frond, but the texture is that of *conforme* and *latifolium*, and the fertile frond also is subsessile.

NOTES ON THE NOMENCLATURE.

Polybotrya appendiculata and *P. asplenifolia*, are considered as varieties of one and the same species, and are included under the former name by the authors of the *Synopsis Filicum*.

The fern figured as *Pœcilopteris contaminans*, *Wall.*, (Pl. CCII. Ferns of Southern India) is, I believe, Wallich's plant, but is also probably the same as *P. semicordata*, *Moore*, (Pl. CCLXX. Ferns of British India.)

Pœcilopteris terminans, *Wall.*, and *P. costata*, and its varieties, are all placed under *P. virens* in the *Syn. Fil.*

Lomaria elongata = *L. Pattersoni*, *Spreng.* in the *Syn. Fil.*

Gymnopteris Feei comes under *G. lanceolata*, *Hook.* It is probable that *G. Feei*, *axillaris* and *variabilis* are all forms of one species, and perhaps also *G. minor*.

Lindsaea Lobbiana is considered only a form of *L. cultrata*.

Schizolecas Griffithianum is considered only a form of *S. ensifolium*

Pl. CCIX. of Ferns of British India is described in the *Synopsis* as *Lindsaea Parishii*, but in the addenda, it is stated that it is probably an abnormal form of *Lomariopsis sorbifolia*.

Adiantum Edgeworthii and *soboliferum* are both placed under *A. caudatum*.

Cheilanthes of the *Synopsis* as a native of the Nilgiris, is, I believe, only introduced.

Pteris O'Brieni is considered as the local form of *P. quadriaurita*.

Diplazium *indigenum*, *Griseb.* is placed under *D. maximum*, *Don.*

Diplazium *peruvianum* and *polypodioides* are considered forms of the same species under the latter name.

Diplazium assamense, and *D. Jerdoni*, are also both considered as forms only of *D. polypodioides*.

It is very probable that all the *Antrophyums* are forms of one variable species.

Gymnogramma Javanica and *serrulata* are considered to be forms of the same species.

Polypodium ornatum, *Wall.*, is included under *L. setigera*; they are however very distinct species.

Goniophlebium argutum, *Wall.*, is included under *G. subauriculatum*, *Bl.*

Pleopeltis longissima. I have never met with this species if distinct from *P. nigrescens*, all the S. Indian and Ceylon forms clearly belong to *nigrescens*.

Drynaria mollis, *Bedd.*, is *D. rivalis*, *Mett.* MSS., of *Synopsis Fil.*; but the former name is the older of the two.

Cyrtosium caryotidium, *Presl.*, is considered as only a form of *C. falcatum*.

Polystichum aculeatum and *angulare* are considered forms of one species.

Polystichum caespitosum, *Wall.*, is considered a form of *P. auriculatum*, *Sw.*

Sagenia coadunata is placed under *S. cicutaria*.

Nephrodium lineatum is placed under *N. glandulosum*.

Nephrodium propinquum becomes *N. unitum*, and *N. unitum* becomes *N. cucullatum*, *Baker*; the older names are however long established.

Lastrea aristata and *L. conifolia* are considered as one and the same.

Lastrea calcarata and *falciloba* are also considered as one and the same.

Lastrea cochlearis, *elongata*, *patentissima* and *odontoloma* are all considered as forms of *L. Filix-mas*.

Lastrea oethodes and *tylodes* are united under the name of *L. proliza*, *Baker*.

Trichomanes phlegmaria and *insigne* are included under *T. Filicula*.

Hymenophyllum Blumeianum is included under *H. polyanthos*.

Aneides Wightiana is included under *A. tomentosa*.

I have doubts about most of the above alternations, so I have not altered the nomenclature, but they should receive the attention of Botanists who have the chance of examining growing plants.

**Ferns of British
India. Plate.**

IN THE

For:

Read.

| | | | | |
|------|-------------------------------------|--------------------------------|--|--------------------|
| 3. | <i>Goniopteris lineata</i> ... | ... Coleb. = | <i>Nephrodium Moulmeinense</i> ... | ... Bedd. |
| 11. | <i>Pleopeltis tridactyla</i> ... | ... Wall. = | <i>Pleopeltis pteropus</i> ... | ... Bl. |
| 13. | <i>Drynaria coronans</i> ... | ... Wall. = | <i>Drynaria conjugata</i> ... | ... Lam. |
| 18. | <i>Adiantum emarginatum</i> ... | ... Bory. = | <i>Adiantum aethiopicum</i> ... | ... L. |
| 20. | <i>Gleichenia gigantea</i> ... | ... Wall. = | <i>Gleichenia longissima</i> ... | ... Bl. |
| 31. | <i>Polystichum stimulosum</i> ... | ... Kze. = | <i>Polystichum ilicifolium</i> ... | ... Don. |
| 38. | <i>Lastrea melanopus</i> ... | ... Hook. = | <i>Lastrea sagenioides</i> ... | ... Mett. |
| 39. | <i>Lastrea microstegia</i> ... | ... Hook. = | <i>Polypodium distans</i> ... | ... Don. |
| 65. | <i>Asplenium bullatum</i> ... | ... Wall. = | <i>Asplenium bulbiferum</i> ... | ... Forst. |
| 69. | <i>Diplazium fraxinifolium</i> ... | ... Bl. = | <i>Diplazium Batamense</i> ... | ... Bl. |
| 77. | <i>Dictyopteris irregularis</i> ... | ... Presl. = | <i>Dictyopteris difforme</i> ... | ... Bl. |
| 79. | <i>Goniophlebium cuspidatum</i> ... | ... Don. = | <i>Goniophlebium persicifolium</i> ... | ... Desv. |
| 83. | <i>Cibotium glaucum</i> ... | ... Hook. = | <i>Cibotium Barometz</i> ... | ... Link. |
| 95. | <i>Acrophorus Hookeri</i> ... | ... Moore. = | <i>Acrophorus multidentatus</i> ... | ... Wall. |
| 102. | <i>Microlepia scabra</i> ... | ... Don. = | <i>Microlepia marginalis</i> ... | ... Thunb. |
| 107. | <i>Davallia polyantha</i> ... | ... Hook. = | <i>Davallia divaricata</i> ... | ... Bl. |
| 118. | <i>Polypodium elongatum</i> ... | ... Wall. = | <i>Lastrea cuspidata</i> ... | ... Mett. |
| 120. | <i>Niphobolus costatus</i> ... | ... Wall. = | <i>Niphobolus stigmosus</i> ... | ... Sw. |
| 130. | <i>Nephrodium eusorum</i> ... | ... Thw. = | <i>Nephrodium truncatum</i> ... | ... Presl. |
| 150. | <i>Selliguea decurrens</i> ... | ... Hook. = | <i>Selliguea elliptica</i> ... | ... Thunb. |
| 162. | <i>Niphobolus detergilis</i> ... | ... J. Sm. = | <i>Niphobolus flocculosus</i> ... | ... Sw. |
| 172. | <i>Polypodium lasiosorum</i> ... | ... Hook. = | <i>Polypodium birtellum</i> ... | ... Bl. |
| 177. | <i>Gleichenia semivestita</i> ... | ... Hook. = | <i>Gleichenia circinata</i> ... | ... Sw. |
| 182. | <i>Trichomanes dissectum</i> ... | ... J. Sm. = | <i>Trichomanes auriculatum</i> ... | ... Bl. |
| 183. | <i>Trichomanes Henzaiense</i> ... | ... Bedd. not } ... Hook. = | <i>Trichomanes Motleyi</i> ... | ... Van den Bosch. |
| 185. | <i>Kaulfussia Assamica</i> ... | ... Griff. = | <i>Kaulfussia osculifolia</i> ... | ... Bl. |
| 193. | <i>Asplenium zamioides</i> ... | ... Hook. = | <i>Asplenium paradoxum</i> ... | ... Bl. |
| 199. | <i>Lastrea nephrodioides</i> ... | ... Bedd. = | <i>Lastrea crassifolia</i> ... | ... Hook. |
| 204. | <i>Pleopeltis Stewartii</i> ... | ... Bedd. = | <i>Pleopeltis malacodon</i> ... | ... Hook. |
| 206. | <i>Nephrodium didymosorum</i> ... | ... Parish. = | <i>Nephrodium molle</i> ... | ... Desv. |
| 230. | <i>Polypodium obscurum</i> ... | ... Hook. = | <i>Lastrea sagenioides</i> ... | ... Mett. |
| 232. | <i>Goniopteris Penanésiana</i> ... | ... Hook. = | <i>Nephrodium Moulmeinense</i> ... | ... Bedd. |
| 262. | <i>Lastrea setosa</i> ... | ... Bedd. = | <i>Cyatopteris setosa</i> ... | ... Bedd. |
| 286. | <i>Trichomanes Kurzii</i> ... | ... Bedd. = | <i>Trichomanes nanum</i> ... | ... Van den Bosch. |

CORRECTIONS

IN THE

For. NOMENCLATURE OF FERNS OF SOUTHERN INDIA.

Read.

| | | | | | | | | | |
|------|------------------------------------|-----|-----|-----|--|-----|-----|-----|---------|
| 7. | Trichomanes Filicula | ... | ... | ... | Linn. = Trichomanes pyxidiferum | ... | ... | ... | L. |
| 27. | Schizoloma recurvatum | ... | ... | ... | Moore. = Schizoloma nitens | ... | ... | ... | Bl. |
| 52. | Antrophyum reticulatum | ... | ... | ... | Kaulf. = Antrophyum plantagineum | ... | ... | ... | Cav. |
| 68. | Botrychium subcarnosum | ... | ... | ... | Wall. = Botrychium daucifolium | ... | ... | ... | Wall. |
| 71. | Ophioglossum parvifolium | ... | ... | ... | L. = Ophioglossum nudicaule | ... | ... | ... | L. fil. |
| 73. | Peranema cyatheoides | ... | ... | ... | Don. = Sphaeropteris barbata | ... | ... | ... | Wall. |
| 86. | Nephrodium abruptum | ... | ... | ... | Presl. = Nephrodium pennigerum | ... | ... | ... | Hook. |
| 90. | Nephrodium terminans | ... | ... | ... | J. Sm. = Nephrodium pteroides | ... | ... | ... | J. Sm. |
| 91. | Oleandra nerifolia | ... | ... | ... | Cav. = Oleandra muscifolia | ... | ... | ... | Kze. |
| 92. | Nephrolepis tuberosa | ... | ... | ... | Presl. = Nephrolepis cordifolia | ... | ... | ... | L. |
| 95. | Lastrea eriocarpa | ... | ... | ... | Don. = Lastrea odorata | ... | ... | ... | Bory. |
| 97. | Lastrea divisa | ... | ... | ... | Hook. = Lastrea Boryana | ... | ... | ... | Willd. |
| 99. | Lastrea flaccida | ... | ... | ... | Hook. = Lastrea setigera | ... | ... | ... | Bl. |
| 107. | Lastrea ochthodes— β tylodes | ... | ... | ... | Kze. = Lastrea tylodes | ... | ... | ... | Kze. |
| 108. | Lastrea spectabilis | ... | ... | ... | J. Sm. = Lastrea symmactica | ... | ... | ... | Willd. |
| 110. | Lastrea gracilescens | ... | ... | ... | Hook. = Lastrea Beddomii | ... | ... | ... | Baker. |
| 113. | Lastrea intermedia | ... | ... | ... | Bedd. = Lastrea elongata—vary montana | ... | ... | ... | Bedd. |
| 133. | Asplenium multijugum | ... | ... | ... | Wall. = Asplenium normale | ... | ... | ... | Wall. |
| 151. | Athyrium falcatum | ... | ... | ... | Bedd. = Athyrium graminifolium | ... | ... | ... | Hook. |
| 155. | Athyrium pectinatum | ... | ... | ... | Wall. = Athyrium aspidioides | ... | ... | ... | Schl. |
| 163. | Diplazium polypodioides | ... | ... | ... | Bl. = Diplazium asperum | ... | ... | ... | Bl. |
| 166. | Polypodium parvulum. | ... | ... | ... | Bory. = Polypodium repandum | ... | ... | ... | Mett. |
| 169. | Polypodium nigrocarpum | ... | ... | ... | Bedd. = Lastrea scabra | ... | ... | ... | Kze. |
| 175. | Pleopeltis oxyloba | ... | ... | ... | Wall. = Pleopeltis trifida | ... | ... | ... | Don. |
| 179. | Pleopeltis tridaetyla | ... | ... | ... | Wall. = Pleopeltis pteropus—var. minor | ... | ... | ... | Bl. |
| 180. | Pleopeltis Wightiana | ... | ... | ... | Wall. = Pleopeltis linearis | ... | ... | ... | Thunb. |
| 181. | Pleopeltis lepidota | ... | ... | ... | Willd. = Pleopeltis lanceolata | ... | ... | ... | Linn. |
| 183. | Niphobolus porosus | ... | ... | ... | Wall. = Niphobolus fissus | ... | ... | ... | Bl. |
| 186. | Niphobolus nummularifolius | ... | ... | ... | Mett. = Drymoglossum piloselloides—vary. | ... | ... | ... | Mett. |
| 202. | Pœcilopteris repanda | ... | ... | ... | J. Sm. = Pœcilopteris contaminans | ... | ... | ... | Wall. |
| 226. | Asplenium spatulatum | ... | ... | ... | J. Sm. = Asplenium affine | ... | ... | ... | Sw. |
| 234. | Polypodium Walkerae | ... | ... | ... | Hook. = Lastrea Walkerae | ... | ... | ... | Hook. |
| 235. | | ... | ... | ... | Hook. = Sagenia membranacea | ... | ... | ... | Hook. |
| 243. | Sagenia gigantea minor | ... | ... | ... | Thw. = Lastrea Thwaitesii | ... | ... | ... | Baker. |
| 247. | Lastrea concinna | ... | ... | ... | Hook. = Lastrea intermedia | ... | ... | ... | Bl. |
| 249. | Lastrea Blumei | ... | ... | ... | Hook. = Nephrolepis ramosa | ... | ... | ... | Beauv. |
| 251. | Nephrolepis oblitterata | ... | ... | ... | Bl. = Microlepia Thwaitesii | ... | ... | ... | Baker. |
| 254. | Microlepia proxima | ... | ... | ... | Hook. = Trichomanes pallidum | ... | ... | ... | Bl. |
| 263. | Trichomanes glauco-fuscum | ... | ... | ... | Sw. = Hymenophyllum emersum | ... | ... | ... | Baker. |
| 267. | Hymenophyllum polyanthos | ... | ... | ... | | | | | |

INDEX OF ALL THE SPECIES FIGURED IN "THE FERNS OF SOUTHERN INDIA"
AND IN "THE FERNS OF BRITISH INDIA."

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| " | Griffithiana | Hook. | ... | ... | 11 | 158 | Sagenia | alata | Wall. | ... | ... | 11 | 169 |
| " | hemionitidea | Wall. | 1 | 182 | | | " | coadunata | Moore. | 1 | 81 | | |
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| " | Himalayensis | Hook. | ... | ... | 11 | 318 | " | gigantea minor, see S. membranacea. | | | | | |
| " | incurvata | Bl. | ... | ... | 11 | 124 | " | Griffithii | Baker. | ... | ... | 11 | 337 |
| " | insignis | Bl. | ... | ... | 11 | 214 | " | heterocarpa | Bedd. | ... | ... | 11 | 47 |
| " | irioides | Lam. | 1 | 178 | | | " | membranacea | Hook. | 1 | 243 | | |
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| " | laucelata | Linn. | 1 | 181 | | | " | pteropus-minor | Bedd. | 1 | 245 | | |
| " | Lehmanni | Mett. | ... | ... | 11 | 260 | " | semibipinnata | Hook. | ... | ... | 11 | 137 |
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| " | nigrescens | Bl. | 1 | 176 | | | " | crinipes | Hook. | ... | ... | 11 | 263 |
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| " | oxyloba Wall., see P. trifida. | | | | | | " | extensum | Bl. | 1 | 85 | | |
| " | palinata | Bl. | ... | ... | 11 | 156 | " | extensum-minor | Bedd. | ... | ... | 11 | 201 |
| " | Parishii | Bedd. | ... | ... | 11 | 125 | " | ferox | Moore. | ... | ... | 11 | 129 |
| " | phymatodes | Linn. | 1 | 173 | | | " | glandulosum | J. Sm. | ... | ... | 11 | 132 |
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| " | pteropus, vary, minor. | Bedd. | 1 | 179 | | | " | lineatum | Presl. | ... | ... | 11 | 133 |
| " | rhyncophylla | Hook. | ... | ... | 11 | 9 | " | molle | Desv. | 1 | 84 & 11 | 206 | |
| " | rostrata | Hook. | ... | ... | 11 | 169 | " | Moulmeinense | Bedd. | ... | ... | 11 | 3 |
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| " | stenophylla | Bl. | ... | ... | 11 | 234 | " | propinquum | Br. | 1 | 89 | | |
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| " | superficialis | Bl. | ... | ... | 11 | 75 | " | punctatum | Parish. | ... | ... | 11 | 131 |
| " | tridactyla, see P. pteropus. | | | | | | " | terminans, see Nep. pteroides. | | | | | |
| " | trifida. | Don. | 1 | 175 | | | " | truncatum | Presl. | ... | ... | 11 | 130 |
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| " | lobbiana | Hook. | ... | ... | 11 | 233 | " | Brunonia | Hook. | ... | ... | 11 | 37 |
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| " | Singaporianum | Wall. | ... | ... | 11 | 168 | " | conifolia | Wall. | ... | ... | 11 | 261 |
| " | Zollingerianum | Baker. | ... | ... | 11 | 251 | " | crassifolia | Hook. | ... | ... | 11 | 199 |
| Cyrtomium | caducum | Wall. | ... | ... | 11 | 45 | " | cuspidata | Mett. | ... | ... | 11 | 118 |
| " | caryotideum | Presl. | 1 | 119 | | | " | deltoides | Bedd. | 1 | 248 | | |
| Polystichum | aculeatum | Sw. | 1 | 121 | | | " | deparioides | Hook. | 1 | 104 | | |
| " | angulare | Willd. | 1 | 122 | | | " | divisa, Wall., see L. Boryana. | | | | | |
| " | anomalum | Hook. et Arnt. | ... | ... | 11 | 219 | " | elongata | Moore. | 1 | 112 | | |
| " | auriculatum | Sw. | 1 | 120 | | | " | vary. montana | Bedd. | 1 | 113 | | |
| " | vary. bipinnatum. | Hook. | ... | ... | 11 | 136 | " | eriocarpa, see L. odorata. | | | | | |
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| " | <i>flaccida</i> | Hook. | 1 | 250 | | | | <i>Hurata</i> | <i>angustata</i> | Wall. | ... | ... | 237 |
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| " | <i>gracilis</i> | Moore | ... | ... | 11 | 198 | | " | <i>pedata</i> | J. Sm | 1 | 12 | |
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| " | <i>nephrodioides, Bedd see L. cras sifolia.</i> | | | | | | | " | <i>polypodioides</i> | Presl | 1 | 15 | |
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| " | <i>recedens</i> | J. Sm | 1 | 98 | | | | " | <i>divaricata</i> | B | ... | ... | 11 |
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| " | <i>scabrosa</i> | Kze | 1 | 169 | | | | " | <i>Giffithiana</i> | Hook | ... | ... | 11 |
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| " | <i>sparsa</i> | Moore | 1 | 103 | | | | " | <i>trichomanoides</i> | Bl | ... | ... | 11 |
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| " | <i>hymenophyllus</i> | Parish. | ... | ... | 11 | 96 | | " | <i>latebrosa</i> | Wall | 1 | 58 | |
| " | <i>immersus</i> | Moore | 1 | 11 | | | | " | <i>ornata</i> | J. Scott | ... | ... | 11 |
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